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An Address
ON
CHRONIC DIARRHŒA.

Delivered before the Derby Medical Society on March 13th, 1924,

BY JOHN A. RYLE, M.D., F.R.C.P. LOND.,
ASSISTANT PHYSICIAN TO GUY'S HOSPITAL.

FOR those of us who are chiefly concerned with clinical problems it is often profitable to discuss the natural history of a single symptom; to consider its several origins and types; and generally to pass in review the diagnostic difficulties to which it may give rise. Such a survey should include a valuation of the methods available for the investigation of the symptom, and should have as one of its aims the practical consideration of how to rationalise treatment. I have chosen as my topic chronic diarrhœa, under which heading may be included recurring or intermittent types of the complaint. I shall, wherever possible, base my remarks on personal clinical observations, referring only to such special or experimental work as seems to have a direct and useful bearing on the question. By diarrhœa we should imply—to quote a formula of J. Ch. Roux—"the too rapid evacuation of too fluid stools," in this way avoiding confusion with certain pseudo-diarrhœas. So far as its actual incidence in practice is concerned, I imagine chronic diarrhœa would not, in our climate and at ordinary times, be regarded as a very common symptom. Nevertheless it is a symptom common to a great variety of diseases, and it may be a very troublesome one to analyse and treat. Furthermore, by reason of the wide extent of our Empire, increasing facilities for travel, and the recent ravages of war, certain types of infective diarrhœa have undoubtedly become more common in this country than they were in previous decades.

For the patient the symptom is mainly a subjective one—that is to say, it is the sensory discomforts and inconveniences which urge him to seek advice. It has, however, an advantage over more strictly subjective experiences in that it is accompanied by the passage of abnormal stools, with regard to the nature and number of which more or less accurate observations are possible. In no type of chronic diarrhœa can we afford to neglect such observations. Sometimes they declare or suggest the diagnosis at once. In all cases they give guidance as to the necessary collateral inquiries. There can be no doubt that modern perfections in domestic sanitation, however great their benefits, have served to hinder the modern physician, and to render him less familiar with the appearances of normal and abnormal fæcal discharges than were his predecessors. It will be within the experience of many of us, too, that the sensibilities of the patient occasionally offer a strong resistance to our attempts to inspect a stool. For these and other reasons the routine inspection and special examination of fæcal specimens have never received the thorough attention accorded to the urinary excretions. I shall have occasion to refer in more detail to this matter as my theme develops.

CLASSIFICATION.

Before we can discuss the several types of diarrhœa and their differential features some form of classification is desirable. The best clinical classifications are usually those based on causal pathology. It so happens in the case of chronic diarrhœa that an anatomical classification of the sites of origin of the symptom is more convenient, and at the same time permits of a clear review of the underlying morbid processes. Thus, by considering in succession the stomach, the small bowel, the large bowel and rectum, and the accessory glands and structures communicating with the digestive tract (in particular the pancreas, the gall-bladder, and the absorptive apparatus comprising the lacteals and mesenteric glands) we cover the origins of all the important varieties of chronic diarrhœa, with the exception of those depending on external nervous stimuli or due to such complex factors as obtain in the case of Graves's disease.

Those due to nervous factors include a rare form of tabetic diarrhœa, diarrhœa due to reflex stimulation from a neighbouring visceral lesion, and emotional diarrhœa. To diarrhœa of gastric origin the term gastrogenous has been applied, and we might for brevity speak similarly of enterogenous, cologenous, pancreatogenous, psychogenous diarrhœa, and so forth. Such adjectives, however, are open to criticism and do not adequately indicate the cause of the symptom. Diarrhœas may also be broadly classified into those dependent upon functional digestive errors and those dependent upon organic and usually ulcerative intestinal disease. With most of us it will probably have been a natural inclination to regard diarrhœa as essentially a bowel symptom. It is, however, no more essentially a symptom of primary bowel disease than tachycardia is a symptom of heart disease, or dyspepsia of stomach disease. At the outset, therefore, the classification which I have suggested reminds us of the necessity in an individual case of reviewing widely diverse possibilities, and of arranging our interrogation of the patient in such a way as to obtain information relating to the function of many parts.

METHODS OF INVESTIGATION.

Assuming a careful history to have been taken and a routine overhaul made, it becomes necessary to consider what special examinations should be conducted in a given case. These examinations may be usefully subdivided into (*a*) essential clinical examinations; (*b*) valuable and often essential accessory investigations which yet fall within the scope and province of the clinician; (*c*) special examinations for which it is usually preferable to obtain the coöperation of an expert in chemical, bacteriological, or radiographic methods.

The essential clinical examinations include inspection of the stools and a rectal examination, and should, strictly speaking, be omitted in no case of chronic diarrhœa.

The accessory investigations falling within the province of the clinician, but in which he may sometimes elect to obtain coöperation, include a direct inspection of the rectum or sigmoid through a proctoscope or sigmoidoscope; a simple microscopic examination of the stools for blood, pus, meat-fibres, &c.; a chemical examination of the stools for the presence of blood, or of a filtrate of the stools for albumin; and occasionally the examination of a blood film. Observing the rate of passage of charcoal given by the mouth is another simple and sometimes useful test.

The special laboratory examinations include gastric analysis; examination of the stools for amœbæ, cysts, parasites and ova, fatty crystals, &c.; chemical analyses of the fatty content of the stools; tests for pancreatic efficiency, and various bacteriological and serological procedures. For the study of the stools with a view to estimating the utilisation of various foodstuffs it may be necessary to employ a special diet, such as that recommended by Schmidt. The radiologist may give useful information as to the rate of passage of an opaque meal through various portions of the alimentary tract, and after an opaque enema may sometimes provide positive evidence of the presence of a colonic growth.

DIARRHŒA OF GASTRIC ORIGIN.

The text-books of general medicine accord little or no space to the consideration of this interesting group of diarrhœas, nor does it appear to be widely recognised in practice. Nevertheless it is one of the most important. Numerically it accounts for more cases than any other single group excepting the colonic group. In the majority of cases of gastric diarrhœa there is a great diminution or complete absence of

the free hydrochloric acid of the gastric juice, and to the extent that complete relief of the diarrhœa is nearly always afforded by the therapeutic administration of dilute hydrochloric acid it would seem that the deficiency is in itself an essential factor.

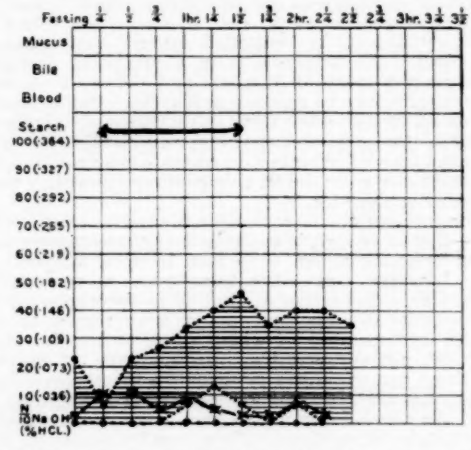
Achlorhydria may be primary or secondary. It may depend either on a true and possibly inherited absence of the normal secretion, in which case the title achylia gastrica becomes applicable, or upon factors causing excessive neutralisation, such as oversecretion of mucus and an undue degree of duodenal regurgitation. Achlorhydria may be unaccompanied by any symptoms whatsoever, and was found by Bennett and myself [1] in 4 per cent. of 100 healthy students. It occurs in upwards of 10 per cent. of dyspeptics and in a great variety of other conditions. It is common but not constant in pellagra and sprue, in chronic gastritis, and in malignant disease. In Addison's anæmia and subacute combined degeneration of the cord it occurs in almost every case. Diarrhœa may be the only symptom of achlorhydria. In Addison's anæmia it is important to recognise that it may antedate the appearance of the anæmia and other classical signs by months or even by many years.

The clinical features of a case of simple gastric diarrhœa are as follows. The evacuations are not as a rule very frequent, three or four stools in the course of the day being a common account, though occasionally they may be as numerous as six or eight. They are generally entirely unaccompanied by pain or colicky sensations—an important point in differentiating them from intestinal diarrhœas. The stools are loose and unformed rather than fluid. Owing to their rapid passage through the alimentary tract they are of a paler brown than the average normal stool. They contain neither mucus nor blood. In virtue of their rapid passage they may show microscopically the presence of undigested meat fibres. Schmidt [2] pointed out that on a diet including raw or underdone meat connective tissue particles (which can only undergo digestion in the presence of gastric juice) may be readily recognised in the fæces of patients with gastric hurry and hyposecretion. The diarrhœa has a tendency to occur in the early morning and to be precipitated by meals. Associated symptoms, if any, are referred rather to the stomach than elsewhere. Epigastric discomfort, slight nausea and sinking feelings, intolerance of alcohol, fats, soups, and fluid meals are among the subjective complaints. In a secondary achlorhydria due to gastritis of alcoholic origin, or due to gross oral sepsis, morning nausea and retching may be present. Acne rosacea was shown by Barber and myself [3] to be associated with achlorhydria in a high proportion of cases, and I have more than once been persuaded of the gastric origin of a chronic diarrhœa by the coexistence of this unmistakable skin lesion. Abdominal and rectal examinations are negative. Careful steps should always be taken to exclude Addison's anæmia, and splenic enlargement or a history of sore tongue or of sensory manifestations pointing to central nervous disease should be seriously regarded.

A fractional test-meal in the majority of cases shows complete absence of free acid throughout the meal, and a very low curve of total acidity. Usually there is rapid emptying, the stomach sometimes being void within a half to three-quarters of an hour instead of in the more usual period of two hours. A radiographic examination with an opaque meal shows a similar rapid emptying and rapid passage throughout the intestinal tract. This rapid evacuation of the stomach, with consequent over-stimulation of activity in the small intestine (and possibly inadequate stimulation of the pancreas) is the actual cause of the diarrhœa. The remarkable and almost constant response to the therapeutic administration of dilute hydrochloric acid in these cases suggests that the acid-control of the pylorus may play a more important part in the behaviour of this sphincter than physiologists have latterly been inclined to allow. The therapeutic test of giving acid may be an important diagnostic point when other methods of investigation are not available.

The treatment includes, where possible, the removal of any likely cause of a secondary achlorhydria, such as alcoholic excess or dental sepsis. An alcoholic diarrhœa, perhaps more commonly seen in beer-drinkers than spirit-drinkers, will improve or clear up altogether if the patient succeeds in altering his habits, and it can be shown that an achlorhydria may under these circumstances be replaced by a normal secretory curve. In simple, unexplained diarrhœa associated with achlorhydria, in Addison's anæmia, and in subacute combined degeneration of the cord, hydrochloric acid should always be given. As the antiseptic, as well as the physiological action of acid, is probably of real importance it should, in fact, be prescribed over long periods or continuously in every case of achlorhydric diarrhœa. Doses as small as 10 or 20 minims of the dilute preparation three times a day may be successful in checking the frequent evacuations, but if antisepsis is aimed at doses of a drachm or more should be given. Taken with lemonade or orangeade with the three main meals it is quite a pleasant beverage. I have also seen one or two cases of chronic diarrhœa, apparently of gastric origin, in which complete relief followed the taking of acid, notwithstanding that gastric analysis gave normal figures.

The following case is instructive. In the early stages the patient's symptoms were those of a simple gastric diarrhœa, but were not recognised as such.



The shaded area represents the limits for free HCl. of 80% of normal people.

represents free HCl.

represents total acidity.

Later he developed Addison's anæmia. The accompanying chart illustrates the test-meal findings characteristic of both conditions.

A middle-aged man came under observation on account of severe anæmia, with a history of breathlessness and failing strength of about one year's duration. For nine years he had been troubled by a chronic painless type of diarrhœa. Seven years previously an X ray examination had shown a rapidly emptying stomach and exceedingly rapid evacuation of the barium. The blood picture was typical of Addison's anæmia, and a test-meal showed complete achlorhydria. Within 24 hours of starting to take hydrochloric acid the diarrhœa was entirely controlled.

Diarrhœa After Gastro-enterostomy.

One other type of gastric diarrhœa resulting from unsuccessful or too successful surgery deserves mention. From time to time one sees patients who have had a gastro-enterostomy performed, and have thereafter developed chronic or intermittent diarrhœa. There are two types, a benign one which is fortunately the more common, and a rare one associated with other and graver symptoms. The benign type closely simulates the simple gastric diarrhœa already

described. It is due to a too patent stoma causing excessively rapid emptying, with the result that there is no time for gastric digestion to take place. There is over-neutralisation of the gastric juice, and consequently an artificial achlorhydria; pancreatic secretion, and certainly exposure to pancreatic secretion, may also be inadequate. The stools are light in colour, and may show fatty crystals and meat fibres, but no blood. There is no pain, but there is often discomfort referred to the small bowel area surrounding the navel and occurring almost immediately after food. In a case of this kind recently under my care the patient had once noticed fragments of egg white in the stools within half an hour of their ingestion; X rays showed the stomach to be empty in ten minutes; test-meal showed achlorhydria, and the stools contained soaps, fatty acids, and meat fibre in excess of normal. Dry meals, lying down after the main meals, and the administration of acid (provided there is no persisting evidence of gastric, duodenal, or jejunal ulceration) often give relief, and pancreatin may be helpful.

The serious type is due to the development of a jejuno-colic fistula as the result of jejunal ulceration. In such cases pain, great emaciation, and vomiting may be present in addition to the diarrhœa, and gastric acidity is likely to be high.

DIARRHŒA ORIGINATING IN THE SMALL BOWEL.

There is only one important cause of diarrhœa in this group—namely, tuberculous ulceration of the ileum. For this reason diagnosis should seldom be in doubt as (excepting in the far less common variety of localised ileo-cæcal tuberculosis) there is nearly always active coexisting lung disease or abdominal tuberculosis. The frequency of the calls to stool is very variable, and it should, of course, be recognised that ulceration may be present with constipation. Generally the frequency bears some kind of relation to the extent of the disease. A common story is four to six actions daily—a rather higher average figure than in most cases of gastric diarrhœa, but a lower one than obtains in ulcerative lesions of comparable severity in the large bowel. In contradistinction to the gastric group pain is a frequent and troublesome association. It is usually referred to the peri-umbilical and right iliac zones, and tenderness in the right iliac fossa is commonly present. There is the same post-prandial tendency to looseness as in the diarrhœas of gastric origin, and hot soups and fluids are especially disturbing. The stools are soft or semi-fluid, and light in colour. It is rare for macroscopic blood or mucus to be present, but positive results with the benzidine, guaiac, and spectroscopic tests are obtainable. If the ulceration be very extensive, and particularly if there be much involvement of the mesenteric glands causing obstruction to the lymphatic flow, the stools may be copious and chalky-looking and contain excess of fats and soaps, while in virtue of the diarrhœa undigested meat fibres may be present. With appropriate technique tubercle bacilli can also be demonstrated.

Treatment in these cases can only be palliative, but Gull[4] pointed out as long ago as 1855 the importance of avoiding the then common practice of giving cod-liver oil or a diet rich in milk and cream in cases of tuberculous disease in which fat absorption is at fault.

DIARRHŒA ORIGINATING IN DISEASE OF THE COLON AND RECTUM.

This is a most important group, and is more beset with difficulties than either of those to which I have referred. It includes the chronic phases of amœbic and bacillary dysentery, other forms of infective ulceration of the colon of unspecified origin, non-ulcerative types or stages of colitis, malignant ulceration of the colon and rectum, the terminal colitis of Bright's disease, certain spurious forms of colitis and diarrhœa, such as that which is commonly classified as "muco-membranous," and those due to constipation, abuse of purgatives, and excess of douching. In this group more than any other careful rectal examination, direct inspection of the mucosa through a sigmoidoscope, and macroscopic and microscopic examinations of the stools are of importance. It is in this group that serious mistakes are made through omission of simple examinations. It will probably have been within the experience of many of us to discover a rectal carcinoma, perhaps in a patient below the common age, primarily regarded and treated, sometimes for months, as a case of "diarrhœa," "colitis," or "piles." I see two or three such cases every year, and there are other pitfalls; I have, for instance, in the last two years seen three patients who had at some previous date suffered from dysentery or ulcerative colitis, but in whom a carcinoma of the colon had subsequently developed and been missed in spite of careful investigations. The old story of colitis or dysentery had served to lull suspicion instead of rousing it, for there is, I believe, a definitely increased liability to malignancy in persons who have previously suffered from chronic infective ulceration of the large bowel.

In a considerable proportion of all cases of diarrhœa from active colonic or rectal ulceration, from whatever cause, blood, mucus, and sometimes pus will have been observed by the patient himself at some period of his illness. So long as ulceration persists blood will be demonstrable microscopically and chemically, if not macroscopically, for the cells have not, as in bleeding at a higher level, had time to undergo disintegration. Leucocytes much more readily undergo disintegration, and for this reason their presence in large numbers points to a lesion low down in the large bowel or to an abscess discharging thereinto. Goiffon[5] states that albumin in the filtrate from a fæcal emulsion is a reliable index of the presence of active bowel ulceration, but I have not employed the test myself. Pain, both colicky and (if there is extensive inflammation of the wall of the bowel) more continuous, and accompanied by tenderness, is a frequent but not constant association of all ulcerative forms of colitis. It is commonly referred to the lower abdomen, and especially to the region of the descending colon and rectum, and is most in evidence during or after defæcation. The diarrhœa may be continuous or intermittent and, particularly in cases of malignant disease, may alternate with constipation. In an acute phase the evacuations are frequent and small, and consist largely of blood, mucus, and sometimes pus. In the more chronic phases they may be watery and intermixed with fæcal material, the blood and mucus being less conspicuous. With growths low down in the colon and in the rectum the blood may sometimes be so intimately mixed with a watery brown malodorous evacuation as to escape the patient's notice. When not sufficiently obvious on a casual inspection blood and mucus can often be made apparent by gently tilting the bed-pan—a receptacle which should always be employed in preference to others in suspicious cases; the viscid mucous fragments are then seen to slide more slowly across the white field than the fluid elements of the stool. Washing with water may also bring abnormal particles to light.

The Dysenteries.

In the case of the dysenteries it is important to recognise that both varieties (though more rarely that due to *Entamœba histolytica*) may be acquired in this country, and that relapses after periods of good health are common. Of the two the amœbic variety is the more likely to give rise to a chronic mild diarrhœa with little or no pain. The asylum dysenteries have been shown to be generally due to bacillary infections, and Hurst[6] has suggested that a considerable proportion of the sporadic cases formerly classified as "ulcerative colitis" are in reality chronic bacillary dysentery. From the point of view of the morbid changes in the mucosa no distinction can be drawn between chronic bacillary dysentery and chronic "ulcerative colitis," and a certain proportion of cases of the latter show a very remarkable response to treatment with polyvalent anti-dysentery serum. When it is remembered that only a comparatively

small proportion of acute bacillary dysenteries give positive cultural results it is no cause for surprise that chronic cases are generally negative from the bacteriological standpoint. This uncertainty in laboratory diagnosis renders a direct visual examination of the diseased surface all the more important. So valuable diagnostically is the appearance of the local lesion that a digression on the application of sigmoidoscopy in all forms of colitis, whether suspected of belonging to a surgical or medical category may, perhaps, be pardoned.

Although, as with other endoscopic instruments, technical difficulties are encountered from time to time, no special manipulative skill is necessary for the use of the sigmoidoscope. It is a simple instrument and, with practice and due care, its employment entails little or no risk. Unless there is ulceration of the anal canal or a concomitant pelvic inflammation its passage—though uncomfortable—is practically painless, and an anæsthetic is seldom necessary and should preferably not be given.

Unless general weakness or special circumstances forbid, the patient should be examined in the knee-elbow position. There should be as little preparation beforehand as possible, and the clearest views are often obtained in patients who have simply been instructed to get up and empty the bowel voluntarily two or three times in the few hours before the examination. Purgatives are best avoided altogether, but simple preliminary lavage may be necessary. A hypodemic of morphine, 20 minutes before the examination, serves to allay anxiety and to lessen peristalsis. After the first few inches are passed the instrument must be guided visually.

In *ulcerative colitis and chronic bacillary dysentery* all phases between a granular mucosa with a tendency to bleed easily and extensive, but usually superficial, ulceration may be seen. The ulcers, except in very severe types, are shallow and their margins are not raised or undermined. The intervening mucosa is never healthy, appearing red, swollen, and easily bleeding. A film of muco-pus frequently covers the ulcerated areas. In cases of long-standing a condition of generalised polyposis may develop.

In the chronic forms of *amœbic dysentery* seen in this country it is rare to find extensive ulceration; but the appearances, though often slight and inconspicuous, may be completely diagnostic. The ulcers are usually quite minute and round and appear as tiny central craters in a small elevation of the mucosa. The craters may be empty or contain a yellow slough, in which case they are not unlike small boils or carbuncles. The intervening mucosa looks healthy. After a few doses of emetine the whole mucosa may become absolutely normal in appearance. I have seen the diagnosis of chronic amœbic diarrhœa made on these appearances in a case in which skilled laboratory investigation completely failed to discover either amœbæ or cysts. The condition responded at once to emetine. In no case, therefore, of possible amœbic diarrhœa can we accept a negative laboratory diagnosis as final unless we have also used our own eyes to inspect the attainable regions of the lower bowel. Thereafter we have still the therapeutic test. It should, of course, be remembered that amœbic infections may involve a higher level; that they have a predilection for the cæcum; and that when we observe healing lower down it does not necessarily imply that it is complete higher up.

The special laboratory investigations in the suspected dysenteries include a search for amœbæ and cysts; cultivations from particles of muco-pus or direct swabbings from an ulcer through the sigmoidoscope; and testing the patient's serum against known bacillary types.

I shall not here embark upon a discussion of the treatment of chronic dysentery and ulcerative colitis beyond saying that treatment should always be instituted as early as possible, and that (whatever symptomatic and local measures are used) it should be as specific as possible, or, in other words, based on as accurate a diagnosis as circumstances will permit. Time lost in palliative measures may seriously prejudice the outlook. Serum or emetine may both be given on a sigmoidoscopic diagnosis without waiting for laboratory reports, just as antidiphtheritic serum is given to cases of "clinically positive" sore-throat. In diarrhœa due to carcinoma coli the stools show the presence of blood and, if low down, of pus cells. They are often very malodorous and fluid. When the accessible part of the bowel appears normal, but there is a clear history of blood and mucus, or these can actually be seen coming down from a higher level with the sigmoidoscope, growth should be strongly suspected. I shall quote a single case in which my own provisional diagnosis was wrong, merely to illustrate the corrective value of sigmoidoscopy and a microscopic examination of the stools.

A man, aged 53, consulted me on account of diarrhœa of one month's duration, associated with some epigastric pain. The evacuations numbered six or seven per diem. He stated that he had had several similar attacks of shorter duration during the previous ten years. His wife stated that he was always inclined to looseness. There was no lower abdominal pain, though he had had pain in the lumbo-sacral region. He used to drink enormous quantities of beer, but had latterly given up beer altogether and admitted only to small quantities of gin and whiskey. His teeth had been extracted on account of bad oral sepsis, and he was wearing a very ill-fitting denture. Appetite was not impaired, but there had been a drop in weight amounting to six pounds in a month. The history of alcoholic excess and dental sepsis; the long-standing history of diarrhœa; the reference of pain to the epigastrium; a red nose, and a negative abdominal and rectal examination suggested to me a diagnosis of chronic gastritis with achlorhydria. However, his age, loss of weight, and a bad family history prompted further investigation. Sigmoidoscopy revealed a proliferative and ulcerated growth at a point 22 c.cm. above the anus, and on the same day my colleague, Dr. J. H. Ryffel, reported red cells and pus in the fæces, and suggested the probability of carcinoma coli. Test-meal showed a low normal curve of acidity. The patient, who was certainly not very observant, had never noticed blood or mucus in his stools.

Radiography may sometimes be of the greatest value in the diagnosis, and particularly in the localisation of a colonic carcinoma, but *negative radiographic evidence should never be accepted as final.* I have seen one case in which a completely negative report on the transit of barium given by enema was submitted, and in which acute obstruction from an annular carcinoma took place within the ensuing 24 hours. In another non-diarrhœic case a confident negative report from a radiologist—in spite of a suspicious local delay, described as being due to a spasm—resulted in the allaying of clinical suspicions in a case in which clinical history might have justified a laparotomy.

Spurious and Artificial Colonic Diarrhœas.

Under this heading, which includes types not strictly conforming to Roux' definition, I propose to consider muco-membranous colitis or, as it is better called, muco-membranous colic, and those artificial diarrhœas which sometimes accompany chronic constipation and the prolonged abuse of purgatives.

The picture of muco-membranous colic is a familiar one. It occurs in women of a particular nervous type in whom chronic anxiety and depression have developed in relation to the state of their excreta and many other things; they are generally of sallow habit and have dark skins; they suffer much from abdominal pain referred especially to the descending colon, which may be unduly palpable as a hard cord; their evacuations are too frequent and they often say that they have diarrhœa. Strictly speaking, the stools are too fluid only to the extent that they are passed in association with large quantities of coagulated mucus often in the form of long casts. If examined carefully and at a time when purgatives are not being taken, it will generally be found that the fæces are fragmentary and constipated. Blood and pus are absent, and the mucous membrane appears normal or only slightly red through the sigmoidoscope. The condition is really one of spasmodic constipation, and the large quantities of mucus are the result of

irritation and over-secretion rather than of actual inflammation. If treatment with purgatives or douches has been carried out over long periods, or there has been much fæcal retention, a true irritative colitis with diarrhœa may be superadded. With chronic rectal constipation or dyschezia, erroneously treated with salts or irritating laxatives, it is not uncommon for small ineffectual fluid stools to be passed, but rectal and abdominal examination will disclose an accumulation of scybala in the lower bowel, and discontinuance of the purgative medicines and the institution of rational hygienic measures should relieve the condition.

DIARRHŒA DUE TO DISEASE OF THE PANCREAS.

Bright[7] was the first in this country to draw attention to the occurrence of fatty diarrhœa in certain cases of carcinoma of the pancreas involving the duodenum. Pancreatic diarrhœa is actually a very rare condition, though mainly on the strength of laboratory reports it has become rather a fashionable diagnosis in certain quarters. The chief feature of the stools in a true pancreatic diarrhœa is the passage of fat in the shape of oil or a fatty coagulum, or of oil which later congeals as a fatty layer. Microscopically fat globules are shown and undigested meat fibres and starch are also present. The diastase test in the urine, or glycosuria may give further evidence of impaired pancreatic function. Carcinoma, calculi, and chronic pancreatitis are among the conditions in which a true pancreatic fatty diarrhœa has been described.

FATTY OR CHYLOUS DIARRHŒA FROM DISEASE OF THE ABSORPTIVE SYSTEM.

There is, however, another important cause of fatty diarrhœa, as Gull[8] originally pointed out, in which the fat is passed intimately mixed with the stools and is largely present as split fats, appearing under the microscope as crystals and soaps. The stools under these conditions are very bulky, in some cases almost incredibly so. They are pultaceous, pale or greyish in colour, greasy and rancid, and they may froth like soap when water is poured upon them. The absorptive apparatus includes the intestinal mucosa and the lacteal tree. Gull recorded the occurrence of fatty stools of this type in tuberculous disease of the mesenteric glands, and I [9] have recently reported similar cases in which in the course of a laparotomy the lacteals were actually seen to be enormously distended with chyle, owing to obstruction by caseous glands in the mesentery. Other conditions in which stools of similar character may be encountered include the so-called cœliac affection in children, tropical sprue, and occasional cases of abdominal malignant disease. In sprue and cœliac disease other symptoms which may accompany the fatty diarrhœa of tabes mesenterica (such as tetany due to the excessive excretion of calcium) are also recorded, and I have, therefore, put forward the suggestion that the diarrhœa in these conditions will possibly be found to be due to obstruction of the lacteals by some other non-tuberculous disease of the mesenteric glands. One of my cases is perhaps worth describing in brief.

A bright-looking and fairly well-nourished girl, aged 23, came under observation on account of chronic diarrhœa and tetany. The stools were enormously bulky, of a porridgy consistency, greyish, and rancid. Under the microscope fatty crystals, soapy fragments, and meat fibres were demonstrated, and a suspicion of pancreatic disease was in consequence entertained. A laparotomy became necessary on account of appendicular symptoms. It was then seen that the lacteals were all greatly distended with chyle, and that this was due to obstruction by caseous glands. Withdrawal of fats from the diet resulted in the passage of formed stools and a cessation of the tetany. There had been a tendency to diarrhœa since infancy, and the tetany had first appeared six years previously, so that without other grave general symptoms or undue abdominal enlargement a condition of tabes mesenterica must have been present for a very long time.

The treatment of all cases of fatty diarrhœa in which faulty absorption is suspected should include rigid fat restriction. It is remarkable what improvement in respect of the diarrhœa, weight, general nutrition, and other secondary symptoms may follow this simple procedure.

SIMPLE DIARRHŒA ACCOMPANYING MESENTERIC GLANDULAR TUBERCULOSIS.

In addition to a true fatty or chylous diarrhœa, we should also recognise a simple form of mild chronic diarrhœa with passage of light-coloured stools, which is among the earliest symptoms in tuberculous disease of the abdominal lymphatic glands. The symptoms may be present long before the abdomen becomes appreciably enlarged or without other classical signs of tabes mesenterica ever appearing. I have seen several cases of this type in the past year in which further investigations strongly supported a diagnosis largely prompted by this symptom. The condition is practically confined to children and young adults. The following is a case in point:—

A small girl, aged 11, was brought to see me on account of attacks of lower abdominal pain. For some time past her mother had noticed that she was having her bowels moved too frequently. The stools were reported as loose and light in colour, and this was confirmed on making a rectal examination. Her mother and teacher had both observed that she easily became tired, and she often went to bed on her own initiative long before her usual bedtime. The pain in the attacks she referred to both iliac fossæ—a rather common reference in these cases. I suggested keeping her under observation at home, with morning, afternoon, and evening temperature records. The five o'clock mouth temperature (the hour at which she often wanted to go to bed) was found to be nearly always 99 or above, and on one occasion it was 100. X ray examination of the thorax showed shadows of numerous small calcified glands at the hila, and considerable peri-hilar infiltration. Rest in bed, with a diet in which fats were kept low, resulted in a steady gain in weight and a cessation of the diarrhœa. The daily swing of temperature steadily diminished. There were no further attacks of abdominal pain. At no period were any of the characteristic signs of tabes mesenterica present.

I do not imagine that the diarrhœa in these cases expresses ileal ulceration, but rather that it signifies agian a fault of absorption due to glandular disease, though of a lesser degree than that encountered in the very occasional cases of fully developed chylous diarrhœa. The diarrhœa of lardaceous disease—now so rarely seen—probably depends in part on faulty absorption due to amyloid changes in the intestinal mucosa.

DIARRHŒA IN CHRONIC CHOLECYSTITIS.

In chronic mild infections of the gall-bladder, persistent or intermittent diarrhœa of a mild grade is a not uncommon complaint. The associated symptoms include epigastric or right subcostal pains and discomforts; a dyspepsia of which nausea and right subscapular or interscapular pain are frequent features; vague general ill-health; a tendency to unexplained spikes of pyrexia, and other manifestations peculiar to chronic infections of the upper gastro-intestinal tract. There is usually tenderness at the gall-bladder point. I am not sure whether the diarrhœa in these cases should be regarded as a reflex diarrhœa akin to the accompanying reflex dyspepsia, or as an expression of the general upper-tract infection, or possibly of the achlorhydria which is found in a certain proportion of the cases. Cultural investigations of the bile obtained through a duodenal tube may support the clinical diagnosis. The treatment is the treatment of cholecystitis. If gall-stones are not suspected and there is no sufficient indication for surgery it should in the first instance comprise general hygienic and dietary measures, and the administration of biliary antiseptics such as urotropine and salicylates.

DIARRHŒA DUE TO ORGANIC NERVOUS DISEASE.

I do not propose to discuss tabetic diarrhœa. French authors, of whom Timbal[9] mentions several, have described a true diarrhœa in tabes, but I have not personally seen a case. The only one in my experience in which the diagnosis might have been entertained did not conform to Roux's definition; that is to say, although the patient—an undoubted tabetic—com-

plained of distressingly frequent and urgent calls to stool, she did not, so far as I could ascertain, pass "too fluid" stools, and more often than not she passed nothing at all. The symptom was, in all probability, due to true rectal or colonic crises. It had been present for many years, but latterly a change in its character had raised the possibility of carcinoma coli. I did not have the opportunity of investigating the matter further.

REFLEX DIARRHŒA.

The following case illustrates a type of diarrhœa which may, I think, legitimately be described under this heading. Cases in which there is an actual appendicular or pelvic abscess should not be included in the same category, for in these the sepsis and perirectal inflammation are the more important factors.

A medical man who had had bacillary dysentery during the war started in 1919 to have diarrhœa with frequently recurring exacerbations, associated with much pain of a colicky character, but a complete absence of localising signs. There was pyrexia during the attacks. Various investigations were made with negative result. Several unsatisfactory diagnoses were suggested. No treatment had any effect. A very thorough overhauling in a clinic between attacks was quite unproductive, and in 1922 it was finally decided to perform a laparotomy. A thickened inflamed appendix was removed, which contained about half a cubic centimetre of pus. There has been no return of the attacks since. The appendix was "silent" in so far as the production of symptoms directing attention to itself was concerned, but had produced such definite bowel symptoms as colic and diarrhœa. I would suggest that these symptoms were akin to the reflex gastric symptoms so commonly seen in chronic appendicular disease.

EMOTIONAL DIARRHŒA.

The nervous diarrhœa which I wish more particularly to stress is a functional condition and expresses an anxiety-state, but it is important to recognise that it may develop out of a true irritative or infective diarrhœa. All grades of it are encountered. One individual may have a mere tendency to diarrhœa at the ordinary times of defæcation or on special stressful occasions—as before a viva voce examination; another unfortunate may so far lose confidence in himself and his power to control the activity of his bowel that it becomes impossible for him to go to any social function or to expose himself to any conditions under which self-consciousness is likely to prevail. To have to face the risk of being out of reach of a lavatory on these occasions becomes for him an insufferable anguish. The condition is a visceral neurosis closely akin to nervous bladder frequency. Like stammering and blushing, it is worse on those occasions when it is most important that it should be in abeyance. It is not amenable to wilful control, but rather aggravated thereby. In the treatment sensible explanation and encouragement play an important part, but it is often valuable as a temporary expedient while confidence is being restored to prescribe, in the smallest doses, opium or codeine. When the patient realises that he has a faithful ally in the shape of a minute pill which will carry him through occasions and affairs previously looked upon as insupportable, he has made a decided step towards recovery from his malady, and may happily proceed to the next stage in which it is just as effective to carry the pill in his waistcoat pocket.

FREQUENCY OF THE VARIOUS TYPES OF CHRONIC DIARRHŒA.

With a view to obtaining a rough estimate of the relative frequency of the various forms of chronic diarrhœa seen in this country, I have analysed a recent series of 54 cases. Of these 24 were under my own care. The remainder were patients of Dr. A. F. Hurst, but I had the privilege of seeing most of them with him, and am indebted to him for permission to include them here. The distribution was as follows:—

Diarrhœa of Gastric Origin.—Seventeen cases, or 31 per cent., including six cases of Addison's anæmia, three of alcoholic gastritis, and eight of uncertain pathology. (The high proportion of cases of Addison's anæmia must be regarded as artificial. Without them the remaining cases would show a percentage incidence of 20, and the percentage incidence of other groups would require revision.)

Diarrhœa Originating in the Large Bowel.—Seventeen cases, or 31 per cent., including six cases of ulcerative colitis, four dysenteries, four cases of carcinoma coli, one non-ulcerative colitis, one muco-membranous colic, and one diarrhœa due to constipation.

Diarrhœa Due to Mesenteric Glandular Disease.—Seven cases, or 12 per cent., including three cases of chylous diarrhœa and four of simple diarrhœa, all probably associated with tuberculous glands in the mesentery, though one was possibly a case of cœliac disease.

Diarrhœa Accompanying Cholecystitis.—Five cases, or 9 per cent.

Emotional Diarrhœa.—Four cases, or 7 per cent.

The remaining cases included one each of pancreatic disease (?), gastro-enterostomy, appendicitis, and sprue.

The correctness of the diagnosis cannot be dogmatically asserted in every one of these cases, but all were carefully reviewed, and a large proportion were very thoroughly investigated. Sometimes more than one factor may be at work. I have, for instance, seen a case (not included in this series) in which a relapse of ulcerative colitis was associated with gastritis and achlorhydria, attention being drawn to this by the presence of acne rosacea.

I hope that I have said enough to indicate the great diversity of conditions which may give rise to chronic diarrhœa, and to suggest the methods most likely to be of service in their differentiation. If I have dealt with the question of treatment superficially and briefly it must be my excuse that diagnosis is the beginning and the end of medicine, and the most essential preliminary to rational therapeutics.

In the preparation of the foregoing remarks, which are largely the outcome of casual notes and impressions collected in the past three years, I have been much stimulated by reference to the writings of such old masters of my own school as Bright and Gull; by the perusal of a recent small volume by Prof. Louis Timbal,[9] of Toulouse; and perhaps most of all by my association with Dr. A. F. Hurst, whose knowledge of the subject and whose power of inspiration are equally difficult to measure.

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OBSERVATIONS ON THE VENOUS PRESSURE IN NORMAL INDIVIDUALS.

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To estimate the venous pressure in man two main methods—the indirect and the direct—have been employed. The indirect methods consist in determining the external pressure necessary to produce collapse of a small superficial vein, or the pressure which just prevents refilling of a vein previously emptied by "milking" towards the heart. For details of these methods reference should be made to the papers of von Recklinghausen,[1] Eyster and Hooker,[2] and Sewall.[3] The direct methods consist in

placing a manometer in communication with a vein by means of rubber tubing and a hollow needle of adequate bore. The vein usually chosen is the median basilic at the bend of the elbow. Moritz and Tabora,[4] who were the first to employ direct methods clinically, used a manometer containing physiological saline to which a trace of antiseptic was added. The whole apparatus was sterilised, and a broad needle, connected to the manometer by tubing, was inserted into the vein, fluid being allowed to flow into the vein until the manometer showed a constant reading. More recently Italian workers, Castellotti [5] and Corradi,[6] have employed similar methods. It appears to us, however, that these methods, which involve sterilisation of the manometer and saline, and which amount practically to an intravenous transfusion at each observation, are not adapted to routine clinical use.

These objections have been partly overcome by the use of Claude's aneroid manometer, originally devised for determining the pressure of the cerebro-spinal fluid. In this method blood is allowed to flow from the vein through a needle into a rubber tube of 3 mm. bore, the pressure being communicated to the manometer by an intervening column of air. It will

Aneroid manometer. (Supplied by G. Boulitte, Paris.)

be seen from the figure that the apparatus consists of the manometer (F), two pieces of rubber tubing of 3 mm. bore (B and D), separated by a short length of glass tubing (C). An ordinary broad serum needle is attached to the end of the rubber tubing (B) by means of a metal nozzle (A), which fits it accurately. The glass tube acts as a window through which the progress of the column of blood may be watched, and as a means of disconnecting from the manometer that part of the apparatus which requires sterilising. The aneroid manometer is graduated in centimetres of water, giving readings from 0 to 100.

Villaret, St. Girons, and Grellety-Bosviel,[7] Leconte and Yacoel [8] in France, and Gazzotti [9] in Italy have made numerous observations by this method both in normal and pathological subjects. As their method appeared suitable for clinical use, we have investigated the results obtained by it in normal individuals under varying conditions as a preliminary to employing it in pathological cases.

Technique (Claude's Method).

The subject lies on his back on a horizontal couch, the head and shoulders being supported by a single pillow. The arm and shoulder must be completely stripped of clothing as the slightest constriction of the limb may artificially raise the venous pressure. It is important that the arm should be comfortably supported and the muscles perfectly relaxed, as tonic muscular contraction impedes the flow of blood along the veins. The tubing (B) carrying the metal nozzle, the glass tubing, and the needle are sterilised in liquid paraffin in a water-bath, and may conveniently be kept ready for use in sterile paraffin. The skin of the arm is sterilised, and the superficial veins at the bend of the elbow are rendered prominent by slight manual compression of the arm. The needle is inserted into a suitable vein in the direction of the blood current and the blood is allowed to flow out for a few seconds till the effects of the stasis have disappeared. The glass tubing having been connected to the manometer, the metal nozzle is now inserted into the needle. As the blood flows from the vein along the tubing the pressure registered by the manometer rises. When the reading becomes constant it is recorded. The nozzle may now be removed from the needle, and after allowing a few drops of blood to escape, it may be replaced and a second reading taken. During the experiment the needle and that part of the tubing containing blood must be kept strictly horizontal and level with the vein, the level of the manometer itself being immaterial. When considerable venous engorgement has been produced in rendering the vein prominent the first reading may be somewhat higher than the second, in which case it should be ignored, and a third reading obtained if possible, the mean of the last two readings being taken. If the needle and tubing are sterilised in liquid paraffin as described, the blood will remain fluid for some time, usually four to five minutes, and at the end of the experiment should drip freely from the needle by gravity.

Position of Arm Relative to Heart Level.—Different observers have placed the arm in different positions, and have taken various points on the chest wall as criteria of heart level. Moritz and Tabora had the arm abducted, slightly bent at the elbow, and pronated, resting on the couch. They adjusted the zero of their manometer to the level of the right auricle, which they took as being 5 cm. below the front of the sternum at the level of the fourth costal cartilage. Under these conditions slight alterations in the position of the arm were not found to affect the reading. Eyster and Hooker, following von Recklinghausen, referred their readings to the mid-point of the antero-posterior diameter of the thorax at the subcostal angle. Lewis corrects his readings to the level of the front of the sternum. The French workers, Villaret and others, place the arm horizontally out from the shoulder in the body plane ("rigoureusement horizontal dans le plan du corps"), by which means, according to them, the hydrostatic factor is eliminated. It appears to us that the exact measurement of the position of a vein relative to the sternum is open to criticism; it is difficult to carry out at the bedside, and owing to the varying shape of the chest in different individuals does not necessarily assure a fixed relation to heart level. It seems equally rational to measure the height of the vein above the level surface on which the subject is lying. For these reasons we have adopted the technique of the French workers, placing the arm horizontal from the shoulder, and supporting it at the elbow on blocks of known height. We find that with the shoulder supported comfortably, the position of the vein relative to the sternum is approximately constant in normal individuals—i.e., 6–8 cm. below the sternum at the angle of Louis or 10 cm. below the subcostal angle. The height of the vein above the couch is usually 11–14 cm. The forearm and wrist must be supported in order to obtain perfect muscular relaxation.

Claude's method has advantages over other direct methods in that the apparatus is portable, the technique simple, the number of parts to be sterilised are few, and there is no necessity to adjust the manometer itself to any particular level, as long as that part of the tubing containing blood is maintained horizontal. Certain criticisms may be offered. Firstly, the manometer must be carefully graduated against a water manometer. We found that, in our instrument, while the higher readings were accurate, the lower readings gave a constant over-estimation, a manometric reading of 15 cm. corresponding to a true pressure of 9 cm. All our readings as given below are therefore corrected from a table constructed by testing Claude's manometer against a water manometer. We can find no mention of correction of the manometric error in the work of the French authors, and this may account for the fact that they obtained somewhat higher readings than we shall record below. Transmission of pressure from fluid to air involves errors due to surface-tension and capillarity. Provided the bore of the tube at the junction of liquid and air is fairly wide—e.g., 3 mm.—this error should not be great, but where the venous pressure is very

small—e.g., below 5 cm. H_2O—the error may be sufficient to render the reading of little value. A certain error will also occur owing to frictional resistance to the flow of blood through the needle. For these reasons we are not satisfied with the reliability of the lower readings obtained by this method. These errors may be largely overcome by the introduction of a pressure bulb connected by means of a T-piece to the rubber tubing (D), near the manometer. An ordinary 20 c.cm. record syringe fixed to the manometer stand is satisfactory. By regulating the pressure in the air column by means of the pressure bulb, the blood is first allowed to reach the glass tube and then the pressures noted when the column of blood just advances, and when it just reverses and moves towards the vein. The mean of these two readings is taken as the venous pressure. In using this modification an ordinary water manometer may be substituted for the anercid.

Normal Venous Pressure.—We give below the readings obtained by Claude's method in 34 healthy medical students who kindly volunteered to help us in this work.

Pressure in cm. H_2O.	Number of cases.
5 or under	3
5–10	19
10–15	11
15–20	1

It will be seen that over 50 per cent. gave readings from 5–10 cm. H_2O, and approximately 90 per cent. between 5–15 cm. H_2O. If we include certain cases in which the pressure was determined after exercise and allowed to fall to normal, and cases in which we used the modified technique described, a pressure of 5–15 cm. H_2O was obtained in 41 out of 47 cases. The normal venous pressures recorded by other observers are as follows :—

Observer.	Method.	Venous pressure (cm. H_2O).
Frank and Rey	Indirect	1–6
Eyster and Hooker	,,	5–10
Moritz and Tabora	Direct	4–8*
Castellotti	,,	4–7
Corradi	,,	8–13
Villaret and others	Claude's man	12–13
Gazzotti	,,	13–14

*Extremes 1–9.

Although Claude's method appears to give higher results than other direct methods, it must be borne in mind that if these figures are corrected to the plane of heart level adopted by Moritz and Tabora they would be lower.

Factors Determining Normal Pressure in Peripheral Veins.

It must be emphasised that in measuring the internal pressure in a peripheral vein we are not recording the pressure in the right auricle, even when the vein is carefully placed at heart level. Intra-auricular pressure is said always to be negative, while in any vein outside the thorax a positive pressure is invariably present unless the vein is completely collapsed.

The factors determining the normal pressure in the peripheral veins may be briefly considered as follows: 1. The *vis a tergo* or the capillary pressure. 2. The *vis a fronte* or the negative intra-auricular pressure. 3. The hydrostatic relationship of the vein to the heart. 4. The volume of blood in the veins.

1. *The Vis a Tergo.*—The capillary pressure depends indirectly on the arterial pressure maintained by the left ventricle, and is regulated by the arterioles and possibly by the capillaries themselves. Krogh [10] finds that the capillary pressure is relatively low and varies with the hydrostatic pressure. At and above heart level it remains constant at approximately 4·5 cm. H_2O, while below heart level it is 4·5 plus the hydrostatic pressure. Lewis,[11] from observations on the cutaneous "white line," concludes that the capillaries are capable of exerting a contractile force equal to 50–100 mm. Hg—that is, up to 135 cm. H_2O—and in this way capillary dilatation is avoided at high hydrostatic pressures.

2. *Vis a Fronte.*—This consists in the suction action due to the negative intrathoracic pressure maintained by the elastic recoil of the lungs. This negative pressure will increase during inspiration and decrease during expiration, and normally varies from 8–12 cm. H_2O. Any permanent increase in intra-auricular pressure must ultimately produce a corresponding increase in pressure in the peripheral veins, but owing to the presence of valves it will take an appreciable time for this increase to traverse the gradient from heart to periphery. Thus in normal individuals we have seldom observed respiratory variations in pressure in the arm veins.

3. *Hydrostatic Effect.*—If the veins were a series of rigid tubes without valves the pressure at any point would be directly proportional to the position of that point relative to the heart. As, however, the veins are collapsible tubes freely supplied with valves, simple physical laws may not be too closely applicable. It was noticed by von Recklinghausen, and has been confirmed since, that, in the veins of the foot the pressure falls considerably short of the theoretical hydrostatic pressure. This has been attributed to the "venous pump" mechanism, which is twofold, peripheral and abdominal. Owing to the arrangement of the valves in the peripheral veins muscular contraction will tend to force blood towards the heart. As each segment of vein included between two sets of valves is a potential pump, compression of any segment expels the contents into the more proximal segments. Each time the diaphragm descends with inspiration the blood in the great abdominal veins is driven into the thorax, this force pump action being aided by the increased negative pressure in the thorax during inspiration. Thus the veins in the lower limbs are protected from excessive hydrostatic pressures which would otherwise be produced by the erect posture. It is obvious from these considerations that under normal conditions the peripheral venous pressure must be constantly varying, and it is open to question how far we can use an arm vein as a manometer for the general venous pressure when the arm is kept flaccid at a fixed level. We have studied the effects of altering the level of the arm on the venous pressure as determined by Claude's manometer. Certain practical difficulties arise; it is not easy to keep the muscles relaxed while changing the position of the arm, nor to maintain the needle and tubing in the correct plane. As a result of our observations we can say that invariably raising the arm from the horizontal lowers the pressure, while lowering the arm raises the pressure. We have not been able to satisfy ourselves that the theoretical hydrostatic difference is always realised, but it is possible that we were unable to allow sufficient time for the pressure to stabilise at the new level. On lowering the arm the rise in pressure may exceed the hydrostatic change. We record two examples :—

Observation 64.

Vein 8 cm. below sternum—V.P. = 10 cm. H_2O.
On lowering vein to 19 cm. below sternum—V.P. = 26 cm. H_2O.

Observation 65.

Vein 18 cm. below sternum—V.P. = 34 cm. H_2O.
On raising vein to 5 cm. below sternum—V.P. = 15·5 cm. H_2O.

When a vein is above heart level it does not completely collapse as can be readily verified, and we have recorded positive pressures 5 cm. above sternum level. It seems possible that at positions above heart level the principles which Krogh has applied to the capillary pressure may also be applied to the venous pressure.

4. *Volume of Blood in the Veins.*—It is usually stated that the veins, being widely distensible, can

accommodate increased volumes of blood without an appreciable increase in internal pressure occurring. This is a point of great practical importance. In seeking to determine increases in venous pressure in heart disease our object is to estimate the degree of venous engorgement. When this is considerable we can easily appreciate it clinically by observing enlargement of the liver and engorgement of the cervical veins. Unless a rise in venous pressure occurs before clinical evidence of venous engorgement is manifest, the determination of venous pressure in cases of heart disease will be of little practical importance. In our own very limited experience of the venous pressure in pathological cases we have not found it raised unless signs of heart failure were present. The French workers, however, maintain that a rise in venous pressure may be the first indication of incipient heart failure. The volume of blood in the veins must also be considered in regard to hydrostatic effects. When the veins are distended at positions below heart level the frictional resistance to the flow of blood will be minimal. On the other hand, at positions above heart level, where the veins are relatively collapsed, the frictional resistance will be maximal owing to the diminished lumen of the vein and the increased velocity of the stream. For these reasons correction of the venous pressure reading to an arbitrary plane is open to objection. It must also be borne in mind that the veins have been shown to contract in response to nervous stimulation, and Henderson [12] has recently attributed considerable importance to the "veno-pressor" mechanism in regulating the volume of venous blood and the venous return to the heart.

Relation of Venous to Arterial Pressure.

According to Villaret and his co-workers, the venous pressure, in normal subjects, in centimetres of water, approximates very closely to the systolic arterial pressure expressed in centimetres of mercury. They attach great importance to this relationship, and are prepared on the basis of the systolic blood-pressure reading in any patient to state what his physiological venous pressure should be, regarding any appreciable variation from this figure as pathological. Thus in certain cases of arterio-sclerosis and hypertension they consider the venous pressure subnormal where it is below the figure demanded by their formula. In all our observations we have recorded the systolic and diastolic pressures, and we have been unable to find any strict relationship between arterial and venous pressures. Thus, in four subjects in whom the systolic B.P. was 135 mm. Hg, the venous pressure readings were 18, 11, 9, and 7 cm. H_2O respectively, and in four subjects with a systolic B.P. of 140 mm. Hg the venous pressure readings were 14·5, 12·5, 11·5, and 9 cm. H_2O.

Venous pressure is dependent on capillary pressure rather than arterial, and capillary pressure is regulated by the condition of the arterioles. We have investigated the effect on the venous pressure of dilating the arterioles with amyl nitrite in six subjects. In all cases the venous pressure rose definitely by several cm. H_2O, the rise running approximately parallel to the rise in pulse-rate. An example of the effect of inhaling 3 minims of amyl nitrite is given below:—

Pulse-rate at 10-sec. intervals.	Venous pressure.	Pulse-rate at 10-sec. intervals.	Venous pressure.
90	6·5	138	9·0
90	6·5	132	9·5
102	6·5	120	10·0
126	7·0	87	10·0
126	—	A*	6·5

A* = Reconnect after short interval.

Effect of Respiration on Venous Pressure.

In normal persons respiratory variations in pressure were not observed in the arm veins. In a pathological case where the venous pressure was 30 cm. H_2O, we observed oscillations of ½–1 cm. Excessive ventilation in normal subjects was found to lower the venous pressure by 1–3 cm. H_2O. If intrathoracic pressure is raised by the subject taking a deep inspiration and holding it for as long as possible, a considerable rise in venous pressure can be produced, the degree of rise depending on the depth of the inspiration and the duration of the apnœa.

An example is given below:—

Observation 38. (B.P. 160/70.)
Initial pressure 7 cm. H_2O, rose to 8·5 cm. H_2O.
On holding breath, rose to 25 cm. H_2O.
On releasing breath, fell to 13·5 cm. H_2O.
Final reading 9 cm. H_2O.

We have obtained a rise in pressure by this method in all subjects, and find it a useful means of proving free communication between vein and manometer.

Effect of Exercise on the Venous Pressure.

In six subjects the venous pressure was taken after fairly severe exertion. Care was taken to employ the minimum compression of the arm before inserting the needle into a vein, and the blood was allowed to escape freely before connecting the needle to the manometer. The readings obtained varied from 9·5 to 19·5 cm. H_2O, and in all cases a definite fall was observed after a few minutes, the average fall being 5 cm.

We conclude that a rise of peripheral venous pressure occurs during exercise, which is in agreement with the findings of Sewall and Gazzotti. This rise may be dependent on a raised intra-auricular pressure resulting from increased venous return, or on arteriolar relaxation in the active muscles producing an increased capillary pressure, or on a combination of these two factors.

Summary.

1. The pressure in the arm veins in normal individuals has been investigated by Claude's manometer according to the technique of Villaret, St. Girons, and Grellety-Bosviel. With the subject recumbent and the arm horizontal the readings obtained were between 5 and 15 cm. H_2O in 90 per cent. of cases. Less constant results were obtained than those recorded by other workers with this method.

2. This method involves errors which probably render the lower readings unreliable, but should prove sufficiently accurate for detecting pathological increases in venous pressure. No reading under 15 cm. H_2O obtained by this method should be regarded as pathological. More accurate determination of low venous pressure is possible if the author's modification is employed.

3. The factors responsible for the normal peripheral venous pressure are discussed.

We have to thank Dr. R. A. Young and Dr. J. Strickland Goodall for kindly allowing us to make observations on patients under their care.

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A NOTE ON THE EFFECT OF INOCULATION OF HETEROLOGOUS ANTIGENS

ON A STEADY AGGLUTINATION TITRE, WITH REFERENCE TO THE DIAGNOSIS OF ENTERIC IN INOCULATED SUBJECTS.

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THE diagnosis of enteric fever on the result of a single agglutination test is no longer considered reliable unless certain conditions are fulfilled. This is due to the fact that there is a fairly large percentage of the population[1] who agglutinate one or more of the various members of this group of micro-organisms, either naturally or as the result of protective inoculation.

In order to establish a diagnosis with any degree of certainty, it is necessary to employ the method of repeated agglutination tests, and thus demonstrate that well-marked fluctuation in agglutination titre which is considered characteristic of enteric infections. During the war a certain amount of evidence accumulated in favour of the reliability of this method of diagnosis, but from some quarters it was subjected to considerable adverse criticism. Garrow[2] in 1920 called attention to an early paper by Dreyer and Walker[3] on the production of immune substances, in which they found that *B. coli* agglutinins produced in rabbits by inoculations of *B. coli* vaccine could be increased by the injection of killed cultures of staphylococci or streptococci or the bacillus of Friedländer. On theoretical grounds, Garrow assumed then, with a considerable degree of justification, that infections which have no relationship to enteric might sometimes increase the production of specific agglutinins in the immunised subject, thereby giving rise to errors in diagnosis by this method. If this non-specific stimulation of agglutinins were at all gross, and were to occur with any frequency, it would in all probability destroy the value of the repeated agglutination method as a means of diagnosis, and the object of this investigation is to see to what extent it is possible to influence a steady agglutination titre in rabbits by the injection of non-specific antigens.

Technique.—Record of Experiments and Commentary.

Dreyer's technique has been used, and the tubes were incubated for two hours at 55° C. The dilutions were put up in geometrical series, starting at 1/20 and doubling the dilution in each succeeding tube, and the last tube to show any agglutination visible to the naked eye was taken as the end-point.

Expt. 1.—As the result of an intraperitoneal inoculation of *B. coli* vaccine into a rabbit, agglutinins to this organism were formed. The sixteenth day after the injection the titre was 1/640, and by the twenty-first day it had fallen to 1/80. Two and six days later the titre was exactly the same, and therefore had apparently become steady. The animal was then given 3 c.cm. of a 24 hours' broth culture of *Staphylococcus aureus*, killed by heating for half an hour at 60° C., into the peritoneal cavity. The serum was tested on the first, second, third, fourth, fifth, sixth, seventh, eighth, and eleventh day after this inoculation, and the titre in each case was 1/80. The titre therefore remained unaffected by the non-specific inoculation.

This experiment is to all intents and purposes an exact replica of one of Dreyer and Walker's experiments, in which they demonstrated a 250 per cent. fluctuation occurring the third day after the staphylococcal injection. The only important difference in technique is the fact that their sera were all stored on ice until the end of the experiment and then tested, whereas in this case the titres were ascertained a few hours after the blood was drawn. It is true they were putting up their dilutions in an arithmetical series and therefore would be more likely to detect slight fluctuations in titre, but an increase of 200 per cent. or more would be easily established when using geometrically increasing dilutions; and furthermore, unless the fluctuation reaches this magnitude, it is not considered of diagnostic importance when carrying out repeated tests. This experiment was then repeated (on another rabbit) using 1 c.cm. of a thick emulsion of sheep's red corpuscles for the non-specific injection. The hæmolytic titre rose to 1/40,000, but the agglutinin titre remained steady. If one could raise a titre 200 per cent. or more by a single non-specific injection, one would expect a larger response than this by continuing the process and giving increasing doses, and therefore a rabbit with a steady agglutination titre to *B. paratyphosus* A was given many massive doses of non-specific antigens. The result will be seen in the following experiment:—

Expt. 2.—The agglutination titre of a rabbit's serum to *B. paratyphosus* A was 1/640 eight months after intravenous inoculation of a vaccine prepared from this micro-organism. It then received 11 doses of non-specific vaccine as stated below. The doses were given intravenously with an interval of seven to ten days between the injections.

No. of injection.	Rosenow's vaccine.	Gonococcal vaccine (millions).	*B. coli* vaccine.
Dose 1	= 0·25 c.cm.	+ 500	Nil.
,, 2	= 0·5 c.cm.	+ 500	,,
,, 3	= 1·0 c.cm.	+ 1000	,,
,, 4	= 1·0 c.cm.	+ 1000	+ 500 mill.
,, 5	= 1·5 c.cm.	+ 1000	Nil
,, 6	= 1·25 c.cm.	+ 1000	,,
,, 7	= 1·00 c.cm.	+ 1000	,,
,, 8	= 1·0 c.cm.	+ 1000	+ 500 mill.
,, 9	= Nil.	1500	+ 1000 ,,
,, 10	= 1·0 c.cm.	= 1000	+ 1000 ,,
,, 11	= Nil.	1500	+ 1000 ,,

Note.—1 c.cm. of Rosenow's vaccine contains:—

D. pneumoniæ, type	1	500 million.
,, ,,	2	750 ,,
,, ,,	3	500 ,,
,, ,,	4	1250 ,,
Streptococcus (hæmolyticus)		1000 ,,
B. influenzæ		500 ,,
Staphylococcus aureus		500 ,,

The animal's serum was tested every four to five days, and in no case showed more than 100 per cent. fluctuation in titre. The fourth and fifth days after the last injection of these massive doses of vaccine, the titre to *B. paratyphosus* A was 1/1280—i.e., 100 per cent. higher than it was before the non-specific inoculations were started.

Dreyer and Walker have noted that the repeated withdrawal of blood tends to raise an agglutinin titre, and therefore it is quite possible to explain a slight increase of this nature on this basis. An experiment was then tried to see if the injection of an organism such as *B. paratyphosus* B would raise a steady titre to *B. typhosus*, as these two organisms are nearer in relationship to each other than *B. coli* and *Staphylococcus aureus*, which have nothing in common. The result was entirely negative, and it was only when two organisms having very close serological relationship such as *B. paratyphosus* C and *B. paratyphosus* B were used, for the primary and secondary inoculations respectively that the primary titre was carried up. In this case the titre to *B. paratyphosus* C was raised from 1/320 to 1/5120 in seven days as a result of the inoculation of *B. paratyphosus* B. In view of the results obtained by Andrewes[4] (1922) it may be noted that the bacterial suspensions employed in this experiment had not been differentiated as specific or non-specific.

Thus it is apparent that with this exception it was found impossible to produce anything more than a slight fluctuation (quite within the margin of experimental error allowed for these tests) in a steady agglutination titre by the injection of killed non-specific antigens. It was then thought advisable to see whether severe, constitutional disturbances would have any effect on a steady titre.

Expt. 3.—A rabbit was immunised to *B. paratyphosus* A and four months later the titre of its serum to this organism was 1/320. It was then injected intravenously with 1/20 c.cm. of a living broth culture of *Pasteurella muris*. The temperature shot up to 107° F. the day after the injection, and the following day it was 106° F. The third day after the injection the animal died after an extremely acute infection. The titre was tested daily, and did not show more than 100 per cent. fluctuation.

Expt. 4.—A rabbit which was running a steady titre of 1/2560 to *B. enteritidis* (Gaertner), as a result of injections of killed cultures of this organism given some months previously, was injected intravenously with 0·5 c.cm. of a broth emulsion of a culture of *B. tuberculosis* (bovine). The seventh day after the injection the temperature rose, and on the ninth day it reached 106° F. The animal was obviously ill and died the seventeenth day after the injection. The titre was tested every two or three days, and it remained steady throughout.

This experiment was repeated on another rabbit, which lived for four weeks, and the result was similar.

Thus the severe constitutional disturbances which occurred in these two experiments seemed to have no effect on a steady agglutination titre. This result was expected in view of the work of Topley, Imrie, and Platts,[5] who have reported the results of various repeated agglutination tests on inoculated subjects suffering from pyrexia due to various causes other than enteric.

Summary.

Various non-specific antigens were used in an attempt to influence a steady agglutination titre in rabbits. The only instance in which the titre was appreciably affected was when the non-specific antigen bore close serological relationship to the specific one.

A steady agglutination titre remained unaffected by severe constitutional disturbances occurring as the result of infections artificially produced.

These results are evidence in support of the reliability of the repeated agglutination method as a means of diagnosis of enteric in the inoculated subject.

In conclusion, I should like to thank Dr. H. Fielden for his kind help in immunising the rabbits, and Dr. A. R. Berrie for his assistance throughout.

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GLANDULAR ACTIVITY IN THE HUMAN FŒTUS.

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IT is well known that the function of certain organs becomes established before birth, but the date at which they first become active is still in many cases obscure. It is not always easy to determine whether a gland or organ is functionally active or not, and, moreover, the elucidation of the problems connected with such activity in the fœtus is rendered the more difficult in that an organ may play a part during development different from that which it does in the adult; further, the transition from one function to the other is probably gradual. It must also be remembered that demonstration of the presence of a secretion in a gland does not of necessity mean that the gland is functionally active, neither does the apparent absence of secretion always indicate the reverse. It is only by examining the evidence obtained from all sources that it is possible to reach conclusions as to the activity of an organ. Although our observations are as yet incomplete, some interesting data have been collected which throw light on this subject, and which seem worth recording.

The glands may be conveniently divided into those belonging to (*a*) the excretory system, (*b*) the alimentary system, and (*c*) the ductless system.

Excretory System.

(1) *Kidney.*—It has long been recognised that the kidney is functional at birth, but the time when it first becomes active has hitherto been very obscure.

(*a*) *Histological Evidence.*—We have recently reported [1] the results of histological investigation of this point. A staining method was devised whereby differences in the H-ion concentration of the cells could be detected as shown by the differential staining of the cytoplasm in the various parts of the tubule. Staining with Scott's hæmatoxylin and Biebrich scarlet following formol-acetic-Muller fixation caused the cells of the convoluted tubules to appear a bright salmon-pink (acid reaction), whereas those of the straight tubules took on a pinkish-purple colour (alkaline reaction). The kidneys of fresh fœtuses of all ages were examined by this method, and the differential staining was obtained in all fœtuses from 12 weeks maturity upwards, but not at 9 weeks or 8 weeks. From the observations of Trevan [2] it would appear that NaH_2PO_4 is specifically excreted by the tubule cells, and it is probable therefore that the first appearance of the staining reaction in these cells depends on the beginning of such excretion. We conclude that the fœtal kidney is certainly functioning by the twelfth week of development, and quite probably as early as the tenth week.

Further histological evidence is forthcoming in that many glomeruli, capsules, and tubules are well developed by 6–7 weeks. The epithelium of Bowman's capsule is found to be cubical in the more newly-formed glomeruli near the surface, whereas in the deeper glomeruli it is flattened even in specimens of 11 weeks. Is it possible that this indicates the presence of fluid in the capsule and tubule even at this early age?

(*b*) *Chemical Evidence.*—A small quantity of urine was obtained from a full-term fœtus, and tested for kreatinin; it was found to contain 0·0779 g. per 100 c.cm. We were fortunate in securing two samples of fresh amniotic fluid, which, in view of its possible excretory function, were tested for urinary constituents. Analysis gave the following results:—

Per 100 c.cm.	Full-term.	32 weeks.
Urea	0·004 g.	0·156 g.
NH_3	0·023 g.	0·0075 g.
Albumin	Not tested.	0·25 g.
Spec. gravity ..	,,	1008
Kreatinin	,,	0·01 g.
Cl', SO_4'', PO_4'' ..	,,	All present.
Uric acid	,,	Absent.
Bile salts	,,	Absent.

(2) *Liver.*—The excretory function of the liver appears to be established early, as well-formed bile-ducts are present in the 12-week fœtus. Pigment can be seen in the intestinal contents at an even earlier date.

Alimentary System.

The various digestive enzymes were tested for * at different stages of development. In the 16-week fœtus pepsin is present in the gastric mucosa, and the pancreas contains both trypsin and trypsinogen, whereas pancreatic lipase and amylase are absent, and no intestinal enzymes are present. By the twenty-fourth week pancreatic amylase can be detected and the trypsinogen has greatly increased in amount. At 32 weeks intestinal enzymes are still absent, but pancreatic lipase is now present in small amount. At full term active trypsin and trypsinogen are both present in the pancreas; the intestinal enzymes have not as yet been tested for. It is remarkable that no HCl has been found in the stomach, even at full term, although pepsin appears as early as the sixteenth week. Mucin is evidently produced early as fully developed goblet cells are present in the intestine, at 8 weeks.

The Ductless System.

(1) *Pituitary.*—The pituitary of an 11-week fœtus shows well-marked histological differentiation and the pars anterior is extremely vascular. The cells of this part show a definite vesicular arrangement and some acidophil colloid-like material is sometimes present.

* We are indebted to Miss D. Woodman, B.Sc., for the carrying out of the enzyme tests.

At this age most of the cells are basophil, but acidophil cells can already be distinguished; as development proceeds the latter become much more numerous and by 30 weeks they present under a low magnification a striking picture when stained with Biebrich scarlet. At full term all parts of the gland appear fully developed.

We have tested for the presence of active principles, using the melanophore reaction described by Hogben and Winton.[3] The test is carried out as follows: An extract of the whole fresh gland is made in 0·6 per cent. NaCl and the resulting solution injected subcutaneously into a yellow frog; expansion of the skin melanophores and consequent darkening of the frog's skin indicates the presence of pituitary hormone. This reaction was obtained quite markedly, even with the gland of a fœtus of 8 weeks.

(2) *Thyroid.*—Although the chief functions of this gland are well known it is extremely difficult to devise a method whereby to test for the active principles of the organ outside the body when only very small quantities of material are available. The evidence that we can put forward for the gland is therefore almost entirely histological.

(*a*) *Histological Evidence.*—Functional activity in the thyroid is regarded as being shown by the following features: (1) A vesicular epithelium of cubical or columnar cells, granular, and with a large spherical nucleus; (2) a rich blood supply; (3) the presence of lightly staining acidophil colloid, usually showing vacuolation at the periphery. The full-time fœtal thyroid appears to be actively secreting as judged by these points. It is, however, not uncommon to find signs of post-mortem change even in apparently fresh material, the change in some cases attaining to complete desquamation of the vesicular epithelium and disappearance of colloid. From an examination of the history of these cases it has been found that there has been almost always either a very prolonged labour or a condition of maternal toxæmia. It is known that the thyroid is stimulated by alimentary toxæmia (McCarrison),[8] and it may be that the toxic condition of the mother or the extreme congestion of the fœtus caused by prolonged labour may induce an unstable condition in the fœtal thyroid, so that post-mortem changes set in much more rapidly than usual. An examination of younger fœtal thyroids shows that some material, staining like the colloid, is present in the vesicles even at 11 weeks maturity; the vesicles are small, but the cells appear to be actively secreting, and the gland is extremely vascular.

(*b*) *Other Evidence.*—The presence of iodine as indicating the active principle of the gland, has been shown by Fenger [4] to be present at least during the last three months of intra-uterine life. From examination of the staining of the colloid, Livini [5] states that the thyroid cells become active when the embryo is between 62 and 66 mm. in length. We have endeavoured, hitherto unsuccessfully, to devise a method of testing for the thyroid active principles based upon their effect on metabolic rate, since the method of Gudernatsch of feeding tadpoles is not here practically applicable.

(3) *Parathyroid.*—Werelius [6] states that this gland probably does not function before birth, but in this investigation we have found the gland at 20 weeks presenting an appearance similar to that of the fully developed gland, with granular cells arranged as in the adult, and a rich vascular supply with large perivascular lymphatics.

(4) *Thymus.*—In the fœtus of 8 weeks cortex and medulla are already distinguishable, and chromaphobe epithelial cells (the precursors of Hassall's corpuscles) can be seen. At 12 weeks typical Hassall's corpuscles are found, although very few in number. The function of this gland is still a matter of controversy.

(5) *Suprarenals.*—The interpretation of the histological appearance of the gland at various stages of its development is by no means easy, and it is hoped to make a separate communication on this point at an early date. Meanwhile the following observations are of interest.

(*a*) *Chromaphil Reaction.*—The gland was tested for the presence of chromaphil material by Ogata's [7] potassium bichromate method, and also by the routine formol-acetic-Muller method of fixation. We have not yet obtained this reaction at all satisfactorily with early fœtal suprarenal glands or fœtal sympathetic ganglia, although a few cells usually give the reaction even at 25 weeks.

(*b*) *Lipoid Reaction.*—Sections of the formol fixed gland were tested for the presence of lipoids by the Sudan III. method of staining: (1) Medulla: At 16 weeks a few cells are found to contain lipoid, and from 32 weeks up to full term and for at least 36 weeks after birth there is a well-marked staining of the medulla cells. This reaction was absent in two cases of anencephaly examined and also in one of osteogenesis imperfecta. (2) Cortex: No lipoid was found in the cortical cells at 16 weeks. From 22 weeks onwards the cells of the middle zone show some vacuolation, and by 32 weeks a very intense Sudan III. staining is obtained in both the outer and the inner zone. This staining was also obtained in the cases of anencephaly and osteogenesis imperfecta mentioned above. In the few postnatal suprarenals which we had the opportunity of observing, the lipoid reaction of the cortex varied very considerably, but as no history as to cause of death was obtained the significance of this is not clear.

(*c*) *Physiological Test for Adrenin.*—The following tests for adrenin were most kindly carried out for us by Prof. F. Ransom. A 10 per cent. extract of the fresh whole gland was made in Ringer's solution, and its action tested on frogs: (*a*) On the peripheral circulation by perfusion; (*b*) on the heart beat by perfusion; (*c*) on the skin glands by subcutaneous injection; (*d*) on the enucleated eye by immersion. By this means the presence of a small but definite amount of adrenin was detected in the glands of fœtuses of 16 and 18 weeks maturity (younger glands have not as yet been tested), whereas the older glands contained a greater quantity. This bears out the observation of others that the presence of adrenin does not necessarily mean that a chromaphil reaction can be obtained in the cells.

Summary.

In conclusion, we wish it clearly to be understood that, although the dates mentioned are the earliest at which any appearance of function has been noted by us, it is quite possible that further investigation may show that these organs become active at yet earlier stages in the development of the fœtus.

1. The fœtal kidney begins to function at about the eleventh week of development. 2. The fœtal liver is functioning as an excretory organ at 12 weeks. 3. The fœtal gastric mucosa contains pepsin at 16 weeks, but no HCl even at full term. 4. The fœtal pancreas contains both trypsin and trypsinogen at 16 weeks; both are also present at full term. Pancreatic amylase is present at 24 weeks, and pancreatic lipase at 32 weeks. 5. Intestinal ferments are not present at 32 weeks, but enterokinase is present at 16 weeks; mucin is present at 8 weeks. 6. The fœtal pituitary contains an active principle at 8 weeks. 7. The fœtal thyroid is producing colloid-like secretion at 11 weeks. 8. The fœtal suprarenal contains adrenin at 16 weeks, but does not give a chromaphil reaction until very much later.

We offer our sincere thanks to all who have kindly supplied us with fœtal material. The expenses of this research have in part been met by a grant from the Thomas Smythe Hughes Medical Research Fund, and one of us (E. E. H.) has to thank the Medical Research Council for a part-time grant.

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A CASE OF "CONGENITAL" OCCLUSION OF THE COMMON HEPATIC DUCT

IN A TWIN BABY,

WITH AN INDIRECT VAN DEN BERGH REACTION.

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CASES of obstruction of the bile-passages in young infants are sufficiently rare to deserve recording, but the case reported here is probably unique in the literature because it presents two features which have important bearings on the pathogenesis of jaundice as well as on the ætiology of the obliteration of the bile-ducts in infants.

T. W. D., a male infant, 8 weeks old, was brought to the out-patient department on Jan. 11th, 1924, on account of jaundice, and was admitted under my care.

History.—The child was one of binovular twins. His birth-weight was 7¼ lb. He was breast-fed for two weeks, but was then weaned on account of vomiting and was put on dried milk. His colour was perfectly normal until he was 3 weeks old, when he began to be yellow. The umbilicus had been discharging at this time. The jaundice then increased gradually until the child became bright yellow all over, when he was brought to hospital. He vomited a little after each feed and bled from the nose when he screamed. The stools had been of putty colour and hard since the onset of jaundice. The twin sister was quite healthy. The mother had nine other children (all of whom, with the exception of one who died of meningitis, are alive and well) and never had miscarriages or abortions. The father had been treated for "purpura."

Progress.—On admission, the child was well nourished and weighed 10 lb. 5 oz. The jaundice was very pronounced and the urine deeply coloured. It, as well as the blood, contained an excess of bile-pigment, but the stools were acholic. Constipation was marked. There was a small umbilical hernia and a few palpable glands in neck and groin. The lower margin of the liver reached to about 2 inches below the costal margin, but the spleen was not enlarged. There were no signs of congenital syphilis and the Wassermann reaction was negative. The fragility of the red blood corpuscles was not increased. The van den Bergh reaction was carried out by Dr. Arthur Davies, pathologist to the hospital, who reported that "the blood serum gave a perfect indirect reaction," pointing to non-obstructive jaundice. The child seemed to progress favourably for the first ten days, taking its feeds of 3 oz. of equal parts of cow's milk and water with only occasional vomiting, and its temperature kept normal except for an occasional evening rise to 99° F. On the eighteenth day the infant became suddenly worse, the temperature rose to 102° and remained high for about five days, when it began to fall gradually till the day of death, on Feb. 5th—i.e., 25 days after admission—from emaciation and collapse. The highest temperature was 103·2°. Its weight at death was 8 lb.

Post-Mortem.—The liver was large and greenish-yellow, firm in consistency and smooth on the surface. There was no naked-eye evidence of fibrosis. There was no gall-bladder or cystic duct. The two hepatic ducts were seen, but appeared to be small in size and to have thicker walls than normally. The viscera were examined for the common bile-duct and its opening into the duodenum, without success. All the other viscera, spleen, &c., appeared to be normal.

It was quite clear from the history, the choluria, and the fæcal acholia, that the case was not one of ordinary, so-called physiological icterus neonatorum. The absence of jaundice in the other children or near relatives showed that it was not a case of the grave type of familial jaundice. The absence of any history of syphilis in the parents, the health record of the patient's numerous sisters and brothers, and the negative Wassermann reaction in the patient's serum practically certainly excluded syphilitic hepatitis. Septic jaundice could similarly be excluded, for although there had been a discharge from the navel there were no signs suggesting direct relationship between it and the jaundice. Buhl's disease (acute fatty degeneration of the newborn) and Winckel's disease (cyanosis afebrilis icterica cum hæmoglobinuria) could also be excluded. The history of "purpura" in the father suggested hæmolytic or acholuric family jaundice, but the urine and fæces and the normal fragility of the red cells excluded this. The diagnosis, therefore, rested between obstructive jaundice due to obliteration of the bile-passages or possibly gall-stones,[1] and the so-called non-obstructive or catarrhal jaundice. The late onset did not exclude "congenital" obliteration, but it made one incline rather to "catarrhal" jaundice, which though extremely rare in infants has been described by Raudnitz[2] and Lovett Morse,[3] and the result of the van den Bergh reaction was, according to the latest theory of jaundice, certain evidence in favour of catarrhal or non-obstructive jaundice. The post-mortem findings, however, showed that this was misleading. This is a point of very great clinical interest and importance. In the theory of jaundice suggested by McNee[4] it is claimed that bilirubin is not formed by the polygonal glandular liver cells, but in the reticulo-endothelial cells of the spleen and Kupffer cells of the liver, and in its passage through the glandular cells of the liver to the bile-passages is modified in some way. Bilirubin so modified—e.g., gall-bladder bile—gives the direct van den Bergh reaction. Bilirubin that has not passed through the glandular liver cells—e.g., in hæmorrhagic effusions—gives an indirect reaction only. Clinical observations by various authorities, including McNee[5] have so far agreed that in all cases of complete obstruction in adults a direct reaction is always obtained, whilst in true hæmolytic jaundice, it is always of the indirect type. It is further claimed that in cases where there is both damage to the polygonal liver cells and obstruction in the bile-passages, both the direct and indirect reactions have been obtained—biphasic reaction. In the case recorded above one should theoretically have expected either a direct reaction, or possibly a biphasic one. The fact that a definitely indirect reaction was obtained shows clearly that the test, as a clinical method of differentiation between the obstructive and non-obstructive types of jaundice, is not as reliable as has been claimed.

Concerning the pathogenesis of obliteration of the bile-ducts in infants, on embryological grounds, it cannot be a true aphasia or lack of development, since the bile-ducts and liver develop as an outgrowth from the duodenum and hence there can be no liver without a bile-duct. The theory put forward by Rolleston[6] is that the obliteration is due to "inflammation of the biliary passages, the result of prenatal absorption by the fœtus of toxins coming from the mother." However plausible this theory may be in the cases of obliteration hitherto recorded it is untenable here, because the fellow twin is perfectly normal. My own view is that the obliteration in this, and probably in all the other cases in which the jaundice is not evident at birth or within a couple of days after birth, is due to *postnatal* toxic absorption from the navel. It is for this reason that I have in the title of this paper modified the word *congenital* by means of inverted commas. I suggest that in future the word *congenital* be omitted altogether when cases of occlusion of the bile-ducts in infants are described.

I am indebted to Dr. Arthur Davies for the biochemical investigations.

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A CASE OF ACTINOMYCOSIS.

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THE subject of this report was by occupation a tram-washer (previously a groom), aged 27, and was admitted to hospital on April 13th, 1923, complaining of a dull pain in the right side of the chest and a swelling over the ribs on the same side. The pain commenced three weeks before admission, and was severe and periodic in character for one week, after which it subsided to a persistent dull ache, and at the same time the swelling appeared on the right postero-lateral aspect of the chest, gradually increasing in size to about 5 inches long and 3 inches wide. There was slight cough and a trace of sputum.

Previous Health.—At the age of 5 he suffered from tuberculous caries of the spine and was treated by rest for 18 months. On Nov. 17th, 1922, he underwent an operation in the Hackney Infirmary for acute appendicitis. Dr. W. Brander, the medical superintendent, has kindly supplied the following information regarding the operation:—

The patient was suffering from perforation of the appendix with general peritonitis. Our clinical notes state that the inflammation was limited to the terminal part of the appendix, which was perforated and sloughing at the tip. The peritoneal cavity was drained by a tube in the pelvis and by another in the renal gutter. There was no collection of pus, but a general peritonitis. The wounds had healed completely by Dec. 16th.

The patient attended the tuberculosis dispensary at this hospital on March 28th, 1923, and we are indebted to Dr. H. T. Howell and Dr. H. F. Hamilton for the following information:—

He complained of a cough and sharp pains, aggravated by breathing, in the right side of the chest. Marked angular deformity of the spine in the upper thoracic region was observed. At the right base the percussion note was impaired, the breath sounds were feeble and were accompanied by sharp crepitations. No tubercle bacilli were found in the sputum, and the temperature was 98·8° F. He again attended the dispensary on April 13th, 1923, when a definite swelling, markedly tender, was found on the right postero-lateral aspect of the chest, extending from the inferior angle of the scapula to the tenth rib.

The patient was admitted to the hospital on the same day. On admission temperature was 99·8° F., pulse 120, and respirations 30. The patient was pale and rather wasted. There was some coarse clubbing of the fingers. The teeth were sound, the tongue clean, and the naso-pharynx normal. There was no tenderness or rigidity of the abdominal wall, and the liver and spleen were apparently normal in size.

The percussion note, vocal resonance, and fremitus were distinctly impaired over the base of the right lung, both anteriorly and posteriorly; no breath sounds were audible. Crepitations were detected over the left, but not over the right base. X ray examination showed diminished excursion of the right diaphragm and suggested the presence of a localised abscess at the right base. No lesion of the ribs was detected. There was evidence of old tuberculous caries of the fourth and fifth thoracic vertebræ, but none of active disease. The leucocyte count was 7700 per c.mm. Neither tubercle bacilli nor actinomyces were found in the sputum. The Wassermann reaction was negative.

On the day after admission it was found that the swelling had disappeared, but that there was still marked tenderness over the area. Two days later, however, the swelling reappeared, and during the next week became inflamed and the surrounding skin indurated, with some central fluctuation. On May 9th, 1923, it was incised, some pus containing greyish-white granules evacuated, and the cavity explored. No connexion with the pleural cavity could be found. A tube was inserted for 48 hours. The pathologist reported the presence of actinomyces in the pus. After the tube had been removed, there developed a persistent sinus discharging moderate quantities of pus containing the greyish-white granules. A larger area of the surrounding skin became inflamed and indurated, the subcutaneous induration occupying a wider area than that of the reddened skin, and after two weeks a second sinus had developed below and 2 inches to the left of the original sinus. A few weeks later a third and smaller sinus developed. As time went on the pus became less granular in appearance, but did not diminish in quantity.

In June, 1923, the general condition of the patient had improved considerably. The temperature was normal, there was no sputum, and the weight, which had gradually been decreasing, had become stationary. In July, however, he commenced to lose weight, and to have profuse night-sweats. The temperature became remittent and irregular. At first the morning temperature was higher than the evening reading, but after three weeks this was reversed. From this time the patient steadily became worse, the temperature more and more irregular, and the pulse more rapid. On Sept. 16th a rigor occurred lasting for ten minutes, and another two days later. There was no rise of temperature on either occasion. Actinomyces were found in the sputum for the first time on Oct. 5th. About this time he began to have slight diarrhœa, which gradually became more severe. In the fæces some filaments resembling mycelium were found, but the actinomyces was not definitely identified. The urine on many occasions was found to contain a large proportion of albumin, but there was unfortunately no special examination for actinomyces.

After the onset of severe diarrhœa the patient wasted rapidly, and the tongue and buccal mucous membrane became ulcerated. The ulcers were small, circumscribed, and shallow, and were situated mainly at the sides of the tongue and the corresponding buccal surfaces of the cheeks. The remaining mucous membrane of the tongue was red and glazed.

During the last ten days of the illness ascites and œdema of the feet and ankles supervened. Death occurred on Dec. 14th, after the patient had been under observation for eight months.

Treatment.

Surgical.—The abscess was incised, curetted, and drained, and the wound dressed with a solution of iodine one part, potassium iodide two parts, and water 300 parts. When the surrounding skin and subcutaneous tissue became reddened and indurated a dressing of ung. ichthyol (10 per cent.) was applied. This prevented the zone of inflammation from extending.

Medicinal.—From the outset gradually increasing doses of potassium iodide were given, until a maximum of 180 gr. per diem was reached, and this was continued for several months. With the exception of a period in June, when the patient's general condition had improved, there was no evidence that the administration of iodides had any marked beneficial effect. Later, gradually increasing doses of French tincture of iodine were given until a maximum of 120 minims per diem was reached.

Vaccine.—Subcutaneous injections of multivalent actinomyces vaccine with an initial dose of 1,000,000 mycelial fragments were commenced on Sept. 24th, and continued every five days, with an increase of 1,000,000 at each injection, until a maximum dose of 10,000,000 fragments was reached. Each injection was followed by a marked increase in the diarrhœa from which the patient was then suffering. No other reaction, either local or general, was observed.

The result of treatment, both with potassium iodide and with vaccines, seems to coincide more or less with the results obtained by Colebrook[1] in cases of thoracic and abdominal actinomycosis.

Autopsy.

The body showed a considerable degree of emaciation. Some œdema was present about the ankles. The sites of the abdominal operation wounds were indicated by the presence of healthy scar tissue. The viscera on the right side of the abdomen were bound together by adhesions; separation of the cæcum brought to view a small, greyish, necrotic area presumably corresponding with the site of the appendix amputation. Behind the peritoneum was a track of yellowish grey, somewhat purulent granulation tissue which, commencing behind the cæcum, passed upwards in front of the right kidney and behind the liver. Penetrating the diaphragm the organism had infected the lower part of the right pleura, which was separated from the healthy pleura by dense adhesions; the track of granulation tissue was continued into the thoracic wall and communicated with the exterior through a number of narrow sinuses.

The infection had spread into the right kidney and the liver, producing in each of these organs a single large lesion consisting of multiple nodules, many of which had broken down in the centre and in some cases contained pus. Very few streptothrix granules were visible in these lesions. The mesenteric glands were somewhat enlarged and of a yellowish colour, but no granules were found in them. A number of small lesions, more numerous on the right side, were found scattered throughout both lungs; the majority of these were irregular in shape and firm in consistence, but a few contained pus. A small abscess containing actinomycotic granules was present in the spleen. No foci of infection were observable elsewhere in the body. The spleen was enlarged and showed advanced hyaline degeneration; a slighter degree of this form of degeneration was found in the kidneys, but none in the liver, which had undergone fatty degeneration. On microscopical examination sections of the lesions presented the usual appearance of granules embedded in a cellular zone with fibrous tissue at the periphery.

The Organism.

Granules for examination were obtained from the sinuses in the thoracic wall and from the sputum; post-mortem, sections of granules were seen in preparations made from the affected organs. Cultures were obtained from material discharged through the thoracic wall. The granules as seen in the pus and sputum consisted of masses of slender mycelial filaments, many of which were so short as to simulate bacilli. Branching was seen in a few instances. The filaments were Gram-positive and for the most part were evenly stained by this method, but a few threads were irregularly stained and presented a dotted appearance. No spores were seen in preparations from the pus. The presence of clubs was not demonstrated. The organism was not acid-fast. Granules from the pus were inoculated in broth and on the surface of glycerine agar and of Dorset's egg medium; stab cultures were prepared in glucose agar. In the primary cultures no growth of a streptothrix was obtained in the tubes incubated aerobically, all of which contained staphylococci; under anaerobic conditions the streptothrix grew in all the media inoculated, growth becoming visible about the fourth day. The organisms failed to thrive in subcultures. On the tenth day the surface colonies were greyish-white, heaped up, coherent; the majority were circular in outline. Fragmentation seems to have occurred in all the colonies; the appearance of the films was that of somewhat sinuous rod-segments with here and there a longer thread sometimes showing branching. In many individuals one end was swollen and contained a spore. Films prepared from the broth cultures presented similar appearances, and in an agar suspension culture examined as late as the seventeenth day no spores were found. Here the colonies were cream-coloured and irregular in shape.

The organism appears to show the main characteristics of the *Actinomyces bovis* as described by Wolff and Israel,[2] Homer Wright,[3] and Colebrook.[4] The filaments would seem to have been shorter than those usually described; this feature was particularly striking in preparations from the cultures. Israel and Wolff noticed a tendency for the organisms examined by them to assume a bacillary form on artificial media. Referring to the streptothrices in general Foulerton[5] draws attention to a tendency to the appearance of fragmentation and of spore formation on artificial media. It is not surprising, therefore, that these degenerate forms should be present in cultures examined as late as the tenth day.

We are indebted to Dr. F. G. Chandler and Dr. S. Roodhouse Gloyne for permission to publish the records of this case, and to Mr. A. W. Smart for preparing the sections for microscopical examination.

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Clinical and Laboratory Notes.

THE PANCREAS OF TELEOSTEAN FISHES AND THE SOURCE OF INSULIN.

BY SWALE VINCENT, LL.D., D.Sc., M.D.,
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AND
F. DICKENS, B.A., PH.D.

(From the Physiological Department and the Biochemical Laboratory of the Bland-Sutton Institute, Middlesex Hospital Medical School.)

IT is well known that in teleostean fishes there is a more or less complete separation of the islets of Langerhans from the zymogenous tubules of the pancreas. This was pointed out years ago by Diamare, Rennie, and Vincent and Thompson.

Soon after the announcement by Banting, Best, Collip, and Macleod of the successful preparation of pancreatic extracts containing insulin, Macleod[1] turned his attention to the pancreas of teleosts in order to determine whether the active substance is in fact derived from the islets, or whether it may be obtained from zymogenous tissue and islet indiscriminately—that is to say, from the pancreas as a whole. He found that potent insulin preparations could be made from separated islet tissue of Lophius and Myoxocephalus. He failed to prepare any insulin from the pancreatic tissue proper (zymogenous or acinar) of Lophius, Myoxocephalus, or Zoarces. His conclusion was that insulin, as its name implies, is derived from the insular and not the zymogenous tissue of the pancreas.

At the outset it was suspected that the "islets" of the above-named species do not consist absolutely of islet tissue, but contain a certain amount of acinar material. It was also by no means certain that the somewhat elusive pancreas of teleosts was entirely free from islets. The degree of concentration of insular material into the "principal islets" varies within very wide limits. For this reason, and for the reason that considerable amounts of insulin were obtained[2] from, for example, submaxillary gland and other tissues, it was thought desirable to re-investigate the matter, using the method of Dodds and Dickens.[3] This method is particularly applicable to small quantities of material.

With this object we worked for a week in the laboratory of the Marine Biological Station at Plymouth. The two species investigated were *Lophius piscatorius* and *Myoxocephalus bubalis*. In the majority of specimens of both these species it is not difficult to obtain separately a fair amount of "principal islet" and of mesenteric zymogenous pancreas. Roughly speaking, the islet tissue has been found to yield six or seven times the amount of insulin obtainable from the same weight of zymogenous tissue. But it must be pointed out that our results differ from those obtained by Macleod in one important respect, for whereas he obtained no insulin whatever from zymogenous tissue we have found a very appreciable amount—enough, indeed, to produce definite symptoms of hypoglycæmia when tested upon rabbits in the usual way. This difference may probably be explained partly by the difference in the method of extraction, and partly by the precaution which we have taken to employ perfectly fresh material. With less fresh material, the amount of insulin obtained from zymogenous tissue was appreciably less. The main result of our investigation is, however, entirely confirmatory of that of Macleod.

It was found by Vincent and Thompson[4] in several lake and river teleosts that the "principal islet" was always permeated by strands of zymogenous tissue. Whether this is true in marine teleosts we cannot say until our histological material has

been examined, but it is certain that minute specks of islet tissue, visible to the naked eye, are scattered throughout the pyloric portion of the pancreas.

It must be confessed that, making due allowances for the possibility mentioned in the last paragraph, the result stands out very clearly that the source of insulin is, in fact, islet tissue. We are justified in assuming, at any rate provisionally, that this is true also in mammalian pancreas.

It appears then that, notwithstanding the intimate anatomical relationship between islet and zymogenous tubules, the numerous transition forms in all groups of vertebrates, and the transformation of alveolus into islet and vice versa under different physiological conditions, notwithstanding all these considerations, the temporary modification of tubule into islet carries with it the assumption of a new function, that of the internal secretion of insulin.

A full account, with details of this investigation, will appear at an early date.

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INCIDENCE OF HEART LESIONS IN INFECTIVE ARTHRITIS.

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IN view of the recent interest in various forms of rheumatism, and of the fact that most authors state that heart lesions are rare complications of rheumatoid, or infective, arthritis, the following figures may be of value:—

Fifty cases (all females) were taken in rotation as they were admitted to the Devonshire Hospital, all of the type known as chronic infective, or rheumatoid, arthritis, between 17 and 72 years of age, giving histories of onset between 12 and 55.

I have divided them into six groups according to the condition of the heart: (A) Cases showing a murmur at one or more valve areas, with dilatation and subjective symptoms of palpitation or dyspnœa. (B) Cases with dilatation and subjective symptoms but no murmur. (C) Cases with murmurs and enlargement, but showing no subjective symptoms. (D) Cases showing murmurs but no enlargement or symptoms traceable to the heart. (E) Cases showing cardiac irregularity but no other evidence of damage to the heart. (F) Cases showing no cardiac abnormality.

The relation of other factors in the history is shown in the table.

Group	A	B	C	D	E	F
Number of cases	5	2	2	10	1	30
Family history of chronic rheumatism	2	2	—	5	1	13
Family history of rheumatic fever	1	—	—	—	—	3
Existence of pyorrhœa	4	1	2	7	1	21
Disease of tonsils	1	1	—	3	—	4
No focus discovered	1	—	—	2	—	—
Personal history of rheumatic fever in childhood	1	—	—	1	—	—
History of "growing pains" in childhood	2	1	—	5	—	7
Average age of onset of infective arthritis	27·4	36·5	35·0	28·4	35·5	35·5
Average duration since onset, in years	16	6·5	2	7·4	3	7·6

The table shows, therefore, that there were heart lesions in 20 out of 50 cases admitted, only 2 of whom give a history of acute rheumatism which might account for it. The remainder were all healthy until the onset of their chronic arthritis, as far as one can discover.

The enormous incidence of pyorrhœa in these cases is worthy of note, in relation to any preventive campaign, as is also the large number of cases giving a history of arthritis in the family, which probably provided the infecting organisms in the first place.

I am indebted to the members of the honorary medical staff for permission to publish these figures.

A CASE OF TORSION OF THE OMENTUM SIMULATING APPENDIX ABSCESS.

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THE following case appears to be sufficiently uncommon to merit report:—

A. C., a married woman aged 44, was admitted to Salford Royal Hospital on Nov. 27th, 1923.

History.—For three days before admission the patient had suffered from pain in the right iliac fossa, which had commenced suddenly and had persisted up till the time of admission. She had vomited frequently. An enema given on the day before admission to hospital had had a large constipated result, but previous to this the bowels had not acted for a week. There were no urinary symptoms, menstruation was normal, and she had had no previous abdominal trouble. Since the birth of her last child she had noticed a prolapse of the uterus, and a hernia on the right side.

Condition on Examination.—Temperature 100° F., pulse 84. There was definite tenderness and rigidity in the right iliac fossa, and a tender mass could be felt extending inwards nearly to the middle line and upwards to the umbilicus. I could find no definite evidence of hernia. I detected nothing abnormal on rectal examination.

Operation.—A provisional diagnosis of appendix abscess was made and I opened the abdomen by a paramedian incision, displacing the right rectus muscle outwards. Lying in the region in which the lump had been felt was a somewhat rolled-up mass of purple, congested, almost gangrenous omentum. It consisted of approximately the right half of the great omentum, and its lower extremity disappeared behind the posterior surface of a previously undiagnosed, flaccid, unilocular ovarian cyst springing from the left ovary and occupying the cavity of the pelvis. Above, the congestion of the omentum ceased abruptly at a point about one inch below its attachment to the transverse colon. The left side of the omentum was normal, and there was a well-defined line of demarcation between it and the congested portion. Separation of the congested from the normal omentum and from the underlying small intestine was easily carried out by the finger tip, when a thin prolongation of the congested omentum was found, firmly adherent to the posterior surface of the ovarian cyst. This adhesion, which appeared to be of long standing, was divided. Except at its upper attachment the omentum was now free, and it could be seen that the congestion was due to a rotation of the right portion through half a circle to the left, round a broad base situated at the upper limit of the congested area. The diseased omentum was ligatured and removed. The appendix was thickened, bound down by adhesions, and chronically inflamed, but showed no sign of recent acute inflammation. Appendicectomy was performed. The ovarian cyst was also removed. It showed no sign of secondary change and there was no rotation of its pedicle. The abdomen was then closed. Convalescence was uneventful.

In referring to torsion of the great omentum text-books state that the condition is very uncommon and, when found, is usually associated with an irreducible right inguinal or femoral hernia. Thomson and Miles[1] state that, "in the absence of hernia torsion of the omentum has usually been mistaken for appendicitis or for an ovarian cyst, the pedicle of which has become twisted." I have no doubt that in this case the adhesion of the omentum to the ovarian cyst, by forming a lower point of attachment for the omentum, allowed of its rotation on its long axis with resulting strangulation.

I am indebted to Mr. Geoffrey Jefferson, assistant surgeon to the Salford Royal Hospital, for permission to publish this case.

[1] Thomson and Miles: Manual of Surgery, vol. ii. Oxford Medical Publications.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

CLINICAL MEETING OF THE
SECTION OF SURGERY: SUBSECTION OF PROCTOLOGY
IN CONJUNCTION WITH THE
AMERICAN PROCTOLOGIC SOCIETY.

THE annual clinical meeting of this subsection, in conjunction with the American Proctologic Society, was held on Wednesday, Thursday, and Friday, July 9th–11th, with Mr. ASLETT BALDWIN, the President, in the chair. The discussion on Wednesday on the

Treatment of Hæmorrhoids by Injection

was opened by Mr. H. GRÆME ANDERSON, who traced the history of this method. First employed by quacks, it was later taken up by American proctologists, and first introduced to this country by Mr. Swinford Edwards about 25 years ago. Many different substances had been employed, including solutions of carbolic acid, quinine and urea, perchloride of iron, &c. He then proceeded to describe his own technique; he employed a special needle and syringe and injected a 10 per cent. solution of carbolic acid containing glycerine. This method of treatment was applicable only to uncomplicated internal hæmorrhoids. About 15 per cent. of cases recurred, but could be relieved by a repetition of the operation.

Dr. C. E. DUKES discussed the pathological changes provoked by carbolic acid. By cutting a number of sections of hæmorrhoids, injected with carbolic acid and renewed at periods varying from 1 to 21 days he was able to follow the changes as they occurred. These were illustrated by microscope slides and epidiascope preparations. He arrived at the following conclusions: Carbolic acid caused an aseptic inflammation characterised by dilatation of the vessels, emigration of the leucocytes, and transudation of lymph. By this means the alien liquid was diluted and removed; thereafter the inflammation quickly subsided. Thrombosis was frequently found in the vessels of piles removed after periods longer than five days after injection. This was partly due to injury to vessels by the needle, and partly to damage to the vascular endothelium by carbolic acid. It was the secondary changes particularly in the intravascular clotting and subsequent fibrosis which had the beneficial effect upon the piles.

Mr. SWINFORD EDWARDS and Mr. J. P. LOCKHART-MUMMERY and Dr. ALFRED J. ZOBEL (San Francisco) continued the discussion. The last-named used the injection method in the case of patients who could not spare the time necessary for operation, since by the former method the patient was able to carry on his business whilst undergoing the treatment. He believed that a few were cured, but nearly all were relieved, and if recurrence took place patients were usually willing to submit themselves to further treatment.

Dr. JACK HALTON (Florida) was an enthusiastic advocate of the injection method after personal experience of it. He believed that nine-tenths of uncomplicated cases were cured. He employed quinine urea 5 per cent. solution and injected 2 to 6 minims into each pile. Only one pile was treated at a time, and each pile might require three injections.

Mr. W. S. PERRIN gave the results of treatment in 380 cases of uncomplicated piles by injection with 10 per cent. carbolic acid solution. About 50 per cent. were absolutely cured, and a little over 30 per cent. were substantially cured, but complained of trivial symptoms. Four cases of recurrence had needed re-injection and five had eventually to be operated upon. He had come to the conclusion that the method was applicable to most cases of uncomplicated piles provided they were not of very large size.

Mr. CECIL ROWNTREE considered that this method gave admirable results in those cases of uncomplicated hæmorrhoids in which hæmorrhage was the chief or only symptom.

Dr. F. L. JELKS (Memphis) opposed the injection treatment very strongly and described some disastrous cases which had come to him after being treated by injection.

Mr. LIONEL E. C. NORBURY had seen complicated fistulæ result from the injection of hæmorrhoids which were partly internal and partly external, and thought that this variety of hæmorrhoid should not be so treated.

Mr. GRÆME ANDERSON replied, and pointed out that bad results usually occurred from using too strong a solution. After trial of various solutions, he had adopted a 10 per cent. solution of carbolic acid as the best.

The discussion on Thursday, July 10th, was opened by Dr. LOUIS J. HIRSCHMAN (Detroit), who described his operation for

Prolapse of the Rectum,

which depended upon shortening the mesentery of the sigmoid through an abdominal incision. This was illustrated on the epidiascope. He claimed that the results of this operation were very satisfactory.

Mr. LOCKHART-MUMMERY admitted the difficulty of treating this complaint and described his own operation.

Dr. WILLIAM M. BEACH (Pittsburg) pointed out that Dr. Hirschman's operation resembled that of Moscovitch.

Mr. W. E. MILES outlined the pathology of prolapse of the rectum and described a first, second, and third degree. The first and second degrees were easily treated by a variety of well-known operations, but the third degree (in which the peritoneum was included in the prolapse) was exceedingly difficult to treat, and he doubted whether Dr. Hirschman's operation would be successful in this stage.

Sir CHARLES GORDON-WATSON said that prolapse of the rectum in children was curable by dieting and careful regulation of habits without any operation.

Dr. RALPH W. JACKSON (Fall River) agreed that operation was rarely necessary for better-class children, but was imperative for the neglected children of the very poor classes. He then employed a cautery.

Pruritus Ani.

Dr. J. G. MONTAGUE exhibited a cinematograph film illustrating the pathology of this condition and its treatment by the operation he had devised. He considered that the irritation was due to the cutaneous nerve filaments being caught in masses of fibrous tissue which were formed, he believed, as a result of infection. The operation he performed resembled Ball's operation, except that he made four small incisions with blunt scissors. The operation was combined with treatment by vaccines of *B. coli* and *Staphylococcus albus*, which were the usual infecting organisms.

Sir CHARLES GORDON-WATSON called attention to the enlarged anal papillæ often present in pruritus ani. A certain proportion of cases were cured by cauterisation of these papillæ.

Dr. DUKES gave the result of a histological study of the distribution of sensory nerves in enlarged anal papillæ. Contrary to the generally accepted statements he had been able to show that a plexus of nerves surrounded the blood-vessels and these terminated in tactile corpuscles. Microscopic slides were exhibited.

On Friday, July 11th, a discussion took place on the

Treatment of Carcinoma of the Rectum.

Mr. W. ERNEST MILES, who opened, said that of the three methods of spread of cancer of the rectum, by

direct extension, by the blood-stream, and by the lymphatic system, the last was of the greatest importance. He then dealt at considerable length with the lymphatic system of the rectum in its various divisions, intramural, intermediate, and external, and illustrated his remarks with diagrams and drawings of microscopic preparations. The intramural plexuses of fine lymphatics, he pointed out, did not have a very long course along the length of the bowel, but were partially separated into systems each occupying a short zone of bowel, and draining by larger trunks to glands lying outside the bowel. The most important of these was the ano-rectal group of 10 to 15 glands lying just above the levator ani. In all the specimens of cancer of the rectum he had examined these glands were infected by cancer cells, even when no other deposits were to be found. From the ano-rectal glands cancer might spread in three directions—upwards along the retro-rectal glands, laterally to the glands in the pelvis as far out as the obturator vessels, and downwards to the fat and glands in the ischio-rectal fossæ. From the retro-rectal glands the cancer cells might find their way to the paracolic glands higher up, so that the latter were not necessarily infected in series; it followed that one could not argue from the fact that the paracolic glands attached to a short section of excised bowel were free from cancerous deposit, that other glands higher in the paracolic chain were also free. Photographs of two specimens excised at operation were then shown. The first exhibited a secondary spread of the cancer upwards, laterally and downwards—widespread dissemination in spite of the fact that it was an early case. In the second the primary growth had extended around three-quarters of the circumference of the bowel. Microscopic examination showed that the cancer cells had already passed through the muscular coat of the bowel and lymphatics. Spread was taking place, though judged by clinical standards the growth was an early one, since it was freely movable. Fixation of a growth in the rectum indicated the passage of the cancer process through the fascia propria of the rectum and indicated a widespread dissemination and a grave prognostic outlook, even after a very radical operation. Mr. Miles maintained that the mesentery of the rectum and sigmoid in cancer of the rectum were comparable with the axillary contents in the case of cancer of the breast, and that it (the mesentery) should be removed as widely as possible in all cases, early or late, whether the contained glands were obviously infected or not. Nothing less was performed in breast cancer and nothing less should be performed in cancer of the rectum. The perineal operation failed in this important respect; he therefore practised and advocated the abdomino-perineal operation.

The Perineal Operation.

Mr. LOCKHART-MUMMERY said he performed the operation advocated by the previous speaker 20 years ago, but had abandoned it since 1913, except for the high cancers at the recto-sigmoidal junction. For cancer in the latter locality he recognised that it was the logical treatment and still performed it, but for other cancers of the rectum he had abandoned the abdomino-perineal operation in favour of the perineal one, which was attended with a lower mortality and applicable to a larger proportion of cases. There were many advantages in having a standardised operation in which the various technical details did not vary. He performed the perineal operation in two stages. The first was a colostomy, and the second, 14 days later, was the excision in one piece of the rectum and as much of the sigmoid and its mesentery as could be brought down together with the anus and surrounding skin, the contents of the ischio-rectal fossæ, and parts of the levatores ani. This operation removed all the glands primarily infected and some of those in the second group. He used spinal anæsthesia in conjunction with gas and oxygen for men, with "twilight sleep" for women. The patient was able to get up 14 days later and to go home within a month. The mortality of this operation taking all cases, private and hospital, together was 9·3 per cent. The recurrence figures were surprisingly low. During the years 1915–19 65 cases were submitted to this operation, of whom 30 were alive and well five years later. He thought that these figures were at least as good as those obtaining with the abdomino-perineal operation.

Dr. W. H. KIGER (Los Angeles) considered that Mr. Miles's operation was the best and most thorough that had yet been devised. He had been working on different lines and had had a considerable degree of success from the slow "cooking" of rectal cancers by low temperature heat. This method was based on the lower degree of resistance to heat of the cancer cell compared with the normal, and was advocated only for inoperable or for very early cases, when the patient refused an operation involving colostomy. He used electric cauteries introduced through a water-jacketed speculum. [These instruments were exhibited.] Although many of his cases appeared to be quite hopeless, he had six or eight patients alive and well five years after the destruction of a rectal cancer by slow cooking.

Advantages of Local Operations.

Mr. SWINFORD EDWARDS, while recognising the merits of the abdomino-perineal operation from a theoretical or pathological point of view, held that very good results could be obtained from a much less drastic procedure. He could recall three cases he had dealt with many years ago by local excision through a linear proctotomy with complete restoration of the bowel and a normal anus. He was uncertain of the fate of the third, but he knew that two were alive and well to-day. The perineal operation which he had largely practised (a modification of Kraske's) aimed at retaining the normal anus whenever possible—a very important matter from the patient's point of view. This operation, while obviously very incomplete from a pathological aspect, had given a cure-rate at three years of 45 per cent. in proven cancers, with a mortality of only 5 per cent. After seeing Mr. Miles's diagrams, he was convinced that he must almost invariably have left many secondary cancerous deposits in lymphatics. From this he could only conclude that these secondaries must in many cases wither up and become inert. He felt very strongly that when so great a degree of success attended these very limited operations, it was unjustifiable to submit patients to a procedure with a mortality of 20–30 per cent., even in expert hands, however perfect that operation might be from a pathological standpoint.

Dr. FRANK C. YEOMANS (New York) referred to the cancer campaign held in America with the object of getting earlier diagnosis of rectal and other cancers. A few ulcers of the rectum were of doubtful malignancy; in such cases he preferred the small risk of cutting out a portion for microscopy to the needless risk of submitting a patient with a benign ulcer to a cancer operation. A great improvement in the results of the more drastic cancer operations had recently set in owing to improvements in anæsthesia and operative technique. In New York the abdomino-perineal operation was standardised for cancers at the recto-sigmoidal junction, Balfour's operation for higher growths, and the perineal operation for lower ones. His own rule was to perform a perineal operation when the growth could be reached by the finger, and he had several cases alive and well seven or eight years after this operation.

Sir C. GORDON-WATSON agreed with Mr. Lockhart-Mummery. The abdomino-perineal operation, while undoubtedly superior on theoretical grounds, should be reserved for high growths, while for lower ones the perineal operation was the only one justifiable on clinical and practical grounds.

Dr. D. C. MCKENNEY (Buffalo) held a brief for the "glorified Whitehead" operation for those patients who refused any operation involving colostomy.

Mr. G. GREY TURNER considered that Mr. Miles had evolved the theoretically perfect operation, but in his (Mr. Turner's) hands that operation was attended with a very high mortality. He then brought before the meeting the records of a number of cases treated by a sacral operation with a considerable degree of success. He had one case alive now 16 years after a sacral operation. Of 43 cases who had survived this operation, 12 could be claimed as cured and two had died of intercurrent disease. Even when not cured the patients often had great relief. As regards the question of retaining the normal anus, he felt that this could only be safely done in cases diagnosed very early. The occupations followed by some of his own cases showed that a properly made and regulated colostomy was not necessarily a serious inconvenience.

Dr. CURTICE ROSSER (Dallas) discussed the question of radiation of rectal cancers either by X rays or radium. In America Howard Kelly, of Baltimore, and Quirke, of New York, both claimed cures by radiation alone, and a higher cure-rate from the use of radiation combined with surgery than from surgery alone. While going through the records of his own cases he had come to the conclusion that growths originally benign frequently underwent malignant change.

A Statistical Survey.

Mr. W. B. GABRIEL gave some statistical records from 130 cases operated on at St. Mark's Hospital by various surgeons. The operative mortality for all cases was 16 per cent. Sepsis accounted for the majority of deaths; four deaths occurred from urinary fistulæ, two from pneumonia, and one each from a variety of other causes, including post-operative obstruction due to a loop of small intestine being strangled in an opening in the peritoneum. 109 cases left the hospital, of whom 44 had since died; 80 per cent. of these deaths occurred within three years. Of the known sites of recurrence the pelvis and liver were the commonest. The oldest patient who still survived the perineal operation was now 82, and had been operated upon 13 years ago. The operability-rate had risen during the last five years from 44 per cent. to 54 per cent., due, perhaps, to more careful selection of the cases admitted to the wards. The percentage of cases alive and well, and showing no sign of recurrence, was 18 at three years after operation and 11·5 at five years.

Replies.

Mr. MILES, in reply, congratulated Mr. Lockhart-Mummery on the results he had obtained from the perineal operation. His own experience had been less fortunate. He had performed 59 perineal operations with one death and 56 recurrences. It was this experience which had led him to perform the abdomino-perineal operation, and to treat cancer in this situation as cancer elsewhere was treated by the removal of all the removable tissue which was likely to be infected. His mortality in 116 operations was 25 per cent., but of 53 cases operated upon since the war with improved anæsthesia (spinal anæsthesia combined with gas and oxygen) the mortality was 9·8 per cent. It was noticeable that ether had been administered in two cases since the war, and both these died. The operation he advocated demanded careful preparation, suitable anæsthesia, a well thought-out technique, and good after-treatment. In his hands it had yielded nearly 50 per cent. of cures.

Mr. LOCKHART-MUMMERY thought that much depended upon the type of growth, and that what was chiefly lacking was some means of determining beforehand the degree of malignancy. He believed that some cases could not be cured by the most radical procedure, while others of apparently the same type might do admirably after a local excision.

The PRESIDENT remarked that he had performed the abdomino-perineal operation successfully upon a lady of over 76 years of age. She came back to see him when she was 85 years, accompanied by her husband, whom she had married since the operation.

JOINT MEETING OF THE SECTION OF ELECTRO-THERAPEUTICS OF THE ROYAL SOCIETY OF MEDICINE AND THE RONTGEN SOCIETY.

A JOINT meeting of the Section of Electro-Therapeutics of the Royal Society of Medicine and the Rontgen Society was held on July 5th at the Radcliffe Infirmary, Oxford, when Sir THOMAS HORDER delivered the Mackenzie Davidson Memorial Lecture on the

Influence of Radiology on the Criteria of Disease.

He said that medicine was indebted to radiology even more than to pathology in the investigation of disease of the deep parts. The X rays furnished evidence on alteration in function as well as in structure. They indicated focal sepsis in regions where it could not be detected clinically, as, for example, in the tooth sockets and nasal sinuses. The lecturer spoke on the revelations of dental radiography and the discovery of pus in cases in which the dental surgeon could find no evidence of pyorrhœa. Even if no pus were present the X rays could reveal evidence of infection by the discovery of a thickened periodontal membrane. Sir Thomas Horder pointed out that the belief that if no pus were present there was no infection would lead to serious error. X rays had proved that nephroptosis was not the grave malady it was formerly supposed to be, and had shown that displacement of the kidney could exist without the symptoms which were originally thought to be due to faulty position. When symptoms were present treatment of the patient rather than of the kidney was required. It was by the X rays alone that it could be decided whether faulty position of the hollow viscera was maintained by lack of tone or by the presence of adhesions. The author emphasised the necessity of realising the variation in position of the hollow viscera which could occur in healthy individuals. This variation made it very difficult in some cases to decide what was normal and what was abnormal. Patients should always be examined in different postures and palpation should be made during radioscopic examination. With regard to the varying position, Sir Thomas Horder thought that efforts to ascertain standards might stultify conclusions drawn from radioscopic examination. X rays also showed the influence of psychic disturbance on the movements and position of the hollow viscera. Attention was called to a case under radioscopic examination in which the stomach dropped and its peristaltic movements ceased at the moment when the patient received a sudden unexpected blow. The discrepancies between clinical and radiographic findings in certain cases—e.g., the discovery of gastric succussion on the couch one day and the failure to discover gastric dilatation next day by X rays, showed the influence of the emotions on the alimentary canal. X rays showed that abdominal belts raised the viscera in cases of enteroptosis and that exercise caused a similar effect. X rays were, further, of great value in showing the presence of enlarged lymphatic glands in regions—e.g., the hila of the lungs—where they could not be detected clinically, and in showing the alterations in size which they could undergo. The rays also showed, in some cases of carcinoma of the breast, that the distribution of the growth was more extensive than that shown by clinical examination. They showed also that metastases in bone occurred much more frequently than was formerly thought. Patients were thought to be suffering from rheumatism whereas the rays showed the presence of secondary growths in bone, and good skiagrams showed rarefaction. With regard to the therapeutic uses of X rays in malignant growth, the lecturer said that X rays had altered our notions regarding the progressive character of malignant disease. Cancer was to some extent controllable by radiation, and many patients lived

longer and more comfortably after their application. Sir Thomas Horder prophesied that these X rays would play a conspicuous part in the elucidation of the problems of malignant disease.

Prof. SIDNEY RUSS read a paper entitled

Experimental Studies on the Lethal Doses of X Rays and Radium on Animal Tissues.

He defined a lethal dose as the dose which prevented proliferation of the malignant cells, not that which destroyed them. He described experiments which he had conducted on animals which were exposed to radiation after grafting malignant tissues in them. After exposure the growth was transplanted into another animal and its proliferative powers noted. After exposure for 40 minutes it was found that 60 per cent. of the growth proliferated. After exposure for 55 to 60 minutes 1 per cent. only proliferated. The latter now required a much longer time of exposure to prevent its proliferation. The part which proliferated required a still longer exposure. Even after the latter a portion proliferated and required an even longer exposure. A stage was eventually reached in which proliferation could not be prevented by an exposure which was not sufficient to kill the animal if given in toto.

Prof. Russ had conducted experiments which showed the relation between the doses of soft and hard rays which caused either epilation, blistering, or lethal effects.

	Epilation.	Blistering.	Lethal.
Soft rays	21	38	56
Hard rays.. ..	126	228	146

He showed that the product of the time of exposure to radium and the intensity of the irradiation gave no accurate idea of dosage. Even with very long exposures it is doubtful whether the deep-lying cells often receive a lethal dose. It had been shown that the dividing cells require a shorter exposure than the growing cell for lethal action, but there was no known method of making cells divide at an appreciably greater rate by artificial means.

This change of vulnerability to radiation, according to the phase of the life-cycle, was perhaps of some importance in radiotherapy, though there was no way by which the cells might artificially be brought into the dividing stage. Prof. Russ submitted that under ordinary conditions the lethal dose that is of importance is the lethal dose for the growing and not for the dividing cells.

Further experiments were described showing the effects which X rays and radium have upon the resistance of the host. Whereas large doses might lead to the death of an animal, it had been shown that repeated small doses spread over considerable periods increased the body-weight and prevented such vigorous growth of tumour transplantations as occurs in the normal rat. Prof. Russ suggested that it might be well to supplement the thorough localised irradiation of a tumour by small generalised doses of radiation designed to increase the resistance to human growth.

MANCHESTER AND MATERNITY NURSING.—A new maternity home for 18 beds is about to be opened in Victoria Park by the Manchester and Salford District Nursing Institution, the intention being to make this a hospital for those who are prepared to pay from three and a half to five guineas a week for accommodation and skilled nursing. In addition, the home will also be a midwifery training centre for pupil midwives, and will assist institution nurses who wish to qualify for the C.M.B. certificate. Dr. Frances Ivens, of Liverpool, said that maternal mortality had not lessened in the last 20 years. To bear a child should be a normal physiological process, but it was often fatal and was often followed by terrible morbidity. The infant mortality-rate had been halved, and they must do the same with the maternal mortality-rate. The annual report showed that 57 nurses had been employed during the year and paid 164,101 visits. Over 8000 new patients had been attended, and the patients themselves had contributed £2046 to the funds.

Reviews and Notices of Books.

PRACTICE OF MEDICINE.

An Introduction to the Practice of Medicine. By WILLIAM BOXWELL, M.D. Dub., F.R.C.P.I., Professor of Pathology, Royal College of Surgeons, Ireland; Physician to the Meath Hospital, Dublin; and F. C. PURSER, M.D. Dub., F.R.C.P.I., Professor of Medicine, Royal College of Surgeons, Ireland; Physician to the Richmond, Whitworth, and Hardwicke Hospitals, Dublin. London: Baillière, Tindall and Cox. Dublin: The Talbot Press, Ltd. 1924. Pp. 905.

CONSIDERABLE courage is required to produce a new text-book for the use of medical students during their first years of clinical study. Established text-books have proved their worth, but, whilst their steady increase in size is a tribute to the progress of medicine, it has certainly rendered them dangerously bulky for the beginner.

The writers have approached their task from a new aspect. A brief account of general pathological and physiological features is introduced before the description of each disease or group of diseases, and it seems certain that this method is one calculated to be useful to the student, whose entry to the wards lies through the laboratories. We feel that high praise is due to the authors for the boldness of their endeavour and, if in some details we disagree, the general scope of their work must remain unchallenged. The section devoted to diseases of the nervous system appears disproportionately long; thus the account of asphasia on p. 756 contains such detailed description of the history of Broca's discoveries that the subsequent exposition of Marie's views is overshadowed, while if phenomena such as apraxia require exposition a fuller description of them seems desirable. On the other hand, the description of the significance of Babinski's signs is better than is usually given and the importance of these signs is well emphasised. The account of encephalitis lethargica on p. 628 will appear inadequate to readers in this country. In the section dealing with diseases of the ductless glands, the authors include diabetes mellitus, a classification justified by recent advances; the biochemical pathology here described is clearly written, but the statement on p. 807 that an estimation of blood-sugar should be made before and after the administration of every dose of insulin is one calculated to alarm both practitioner and patient and to bring disrepute upon an invaluable remedy. Future editions should receive drastic revision of the sections devoted to chemical laboratory tests. The present account of the tests for pancreatic insufficiency lays no stress on the importance of examining the fæces; Fehling's solution rather than Benedict's is recommended, and Rothera's test for acetone is not given; nor is mention made of the value of estimating the urea and non-protein nitrogen in the blood.

The general conception of this book is excellent; it keeps the pathological aspects of medicine clearly before the minds of its readers.

HERNIA.

Its Anatomy, Etiology, Symptoms, Diagnosis, Differential Diagnosis, Prognosis, and Operative Treatment. By LEIGH F. WATSON, M.D., Associate in Surgery, Rush Medical College, Chicago, U.S.A. London: Henry Kimpton. 1924. Pp. 660. 52*s.* 6*d.*

THE author has accomplished his aim at producing a complete treatise on hernia. He has written a large but eminently readable volume, packed with information. Whether he is tracing the history of hernia from ancient Egypt through Greece and Rome, or discussing the latest applications of local anæsthesia, he equally succeeds in infecting the reader with his own enthusiasm for his subject. The attraction

of the book largely depends upon the historical setting in which it is framed. We feel that we are the legitimate successors of Hippocrates and Celsus, of Paré and Lavater, and we gain a new conception of the continuity of our art and a new appreciation of the skill and insight of its founders. Every known variety of hernia receives full discussion, backed by ample statistical information and an elaborate bibliography.

The author shows sound judgment in the views and methods which he has selected for approval, and the value of the book is enhanced by an adequate description of those he would discard. Admirable illustrations are included.

UROLOGY.

Lehrbuch der Urologie. By Prof. Dr. HANS WILDBOLZ, Berne. Berlin: Julius Springer. 1924. Pp. 546. $8.60.

THIS is not only a text-book of urinary diseases, it includes also affections of the male organs of generation. Throughout we get the impression that the teaching is the outcome of personal experience and therefore the book becomes more valuable. It is not simply a compilation. Mostly the recommendations conform to English practice, but here and there appear notable differences. The author regards perineal prostatectomy as preferable to the suprapubic method. His own operation, in which he reconstitutes the prostatic urethra by suture, has a mortality of between 5 and 10 per cent. with fewer complications than the suprapubic method with a mortality of 10–15 per cent. The method given on p. 70 for estimating the size of the kidney pelvis is not very good or accurate. Pyelography can be made absolutely safe by taking proper precautions. For refractory pyelitis an in-dwelling ureteric catheter is recommended, a method of treatment scarcely ever adopted in this country. A hæmatogenous origin for perinephric abscess is still put forward, but the author rightly says that the rupture of a small cortical kidney abscess cannot be laid aside as the possible cause. The section on tuberculosis of the kidney is particularly good. The pitfalls and difficulties in diagnosis are clearly set forth. Like most continental surgeons the author lays a good deal of stress upon the indigo-carmine test and cryoscopy. Tumours of the testicle are rather inadequately treated.

Taken as a whole the work is a very good and satisfactory text-book. The most careful critic can only point to minor blemishes. The book is illustrated by a number of informative coloured and monotone plates which are beautifully reproduced.

HEARING.

By R. M. OGDEN, Professor of Education in Cornell University. London: Jonathan Cape. 1924. Pp. 351. 15*s*.

IN this book Prof. Ogden deals with the psychological aspect of hearing—that is, with the manner in which sound affects the conscious mind—and he travels through subjects many of which are of interest to medical men in general and to otologists in particular. In the first two chapters are described briefly, but adequately, the physics of the sound-wave and the anatomy of the hearing organ. This is followed by a disquisition on the physiological theories of hearing from that of Helmholtz to that of Wrightson; the author does not attempt to decide between the opposing "resonance" and "telephone" theories of audition.

Every variety of sound can be classified into the three groups of tones, vocables, and noises. A most interesting description of the attributes of tone is given, that of brightness is ascribed to variation of the wave-form whereby the pulsation is shortened in comparison to the wave-length so that the trough becomes longer than the crest. There is a long discussion of vocables, or the characteristics of vowel sounds, and of Hermann's theory of "formants"; but surely the sound of "ê," as in "fête," is not a pure vowel, but a diphthong. A large part of the book is concerned with the character of sounds in relation to music, and interesting references are included to the musical scales of primitive races, of ancient Greeks, and of Oriental peoples. A chapter of more direct medical interest deals with the localisation of sound. The physical conditions under which a binaural sound is localised are primarily three: (1) the intensity ratio of the sound at the two ears, (2) the phase-difference of the sound-wave, and (3) the relative time of arrival of the sound at the two ears. Interesting experiments are given as to the bearing of these three factors on localisation. A chapter on the pathology of hearing is rather disappointing; it is not sufficiently full to be of real value, and is perhaps a little out of place in a book of this kind. Of the experiment with a tuning fork on the vertex it is said: "If one of the external canals is closed, the intensity of the sound in the closed ear is increased by reason of the fact that the passage of the sound-waves outward is to some extent interfered with, so that the imprisoned column of air resonates"; but is this a satisfactory explanation? For it is certain that the same phenomenon occurs when the meatus is solidly filled with cerumen or any other material. The paragraphs on the nature of auditory defects, deaf-mutism, and mechanical aids to hearing are quite inadequate. The book ends with a criticism of musical education in America, and a plea for better aural education in speech, which would also be applicable to this country.

MINOR SURGERY AND BANDAGING.

Eighteenth edition. By GWYNNE WILLIAMS, F.R.C.S. London: J. and A. Churchill. 1924. Pp. 423. 10*s*. 6*d*.

A VOLUME which started upon its career in 1861 and which has passed through 18 editions may be regarded as something more than a classic, it is almost a household friend. It would be interesting to compare the last edition with the first and to see how much remains of the original pages, but it is certain, anyhow, that Christopher Heath would be the first to appreciate the sound common sense and the practical outlook of his grown-up child. In the preface the author expresses a modest hope that it may continue to be a guide to house-surgeons and students. There is scarcely a page from which the practising surgeon may not pick up a useful hint, from the tying of a knot to the putting up of a fractured femur. Incidentally, the chapters on fractures are particularly good and will repay careful study even by a surgeon of experience. We should like to recommend the book to those who teach surgery. Minor surgery is what the student should know thoroughly if he is to be efficient in any branch of his profession. He may leave hospital full of the latest details of gastrectomy and bone-grafting, but entirely unable to treat a dropped finger. A book like this would do much to restore in his teacher as well as in himself a true sense of proportion.

PHYSIOLOGY.

Human Physiology: A Practical Course. By C. G. DOUGLAS, C.M.G., M.C., D.M., F.R.S., Fellow of St. John's College, Oxford; and J. G. PRIESTLEY, M.C., D.M., Christopher Welch Lecturer in Clinical Physiology, University of Oxford. Oxford: Clarendon Press. 1924. Pp. 232. 12*s*. 6*d*.

FOR general utility as well as breadth, the course given for the Final Honour School of Physiology in Oxford must be admitted to come second to none. Local conditions are favourable, and such courses are not given elsewhere, for various reasons. Teachers who wish to imitate the Oxford course, which they may well desire to do, have now fairly full accounts of the wide range of exercises comprised in the studies at Oxford. The present book deserves nothing but praise—the description of experiments is admirably

clear and the selection of experiments is carefully made. The book naturally deals in adequate detail with those observations on respiration and on the blood-gases for which the school is famous, and it is satisfactory to have a connected record of the methods used. There are also chapters on the use of instruments for the investigation of the circulation, and on the secretion of urine and the movements of the alimentary canal. A few chemical methods, such as some of the important ones for determination of blood-sugar and urea, are included. To teachers and advanced students the book will be very useful, and it is regrettable that the equipment and technique involved preclude the carrying out of such exercises by the ordinary medical student. To the clinical research worker the book may, we think, show itself indispensable.

Collected Papers, Institute of Physiology, University College, London. Vol. XXI. Edited by ERNEST H. STARLING, C.M.G., M.D., Sc.D., F.R.S., Sir WM. M. BAYLISS, M.A., Sc.D., F.R.S., and J. C. DRUMMOND, D.Sc., F.I.C. 1923.

THE 45 papers which comprise this closing volume of a remarkable series, show the same high standard of excellence which has marked all the volumes of collected papers published during the time that Prof. Starling was the head of the University College Institute of Physiology. The papers fall roughly into three groups, corresponding to the direction of inquiry followed by each of the three professors who edit the collection. About half of the papers represent work on vitamins by Prof. Drummond and various collaborators, particularly Miss Katharine Coward and Dr. S. S. Zilva; these papers have contributed largely towards giving the Biochemical Department of this College a high status. Original work breaking some fresh ground is that by Drs. G. V. Anrep and R. K. Cannan on the metabolism of the salivary glands, and on the effect of alteration of blood reaction on the lactic acid concentration of the blood. An interesting paper on active hyperæmia is contributed by Dr. D. T. Harris. Prof. Starling and various collaborators contribute papers on the heart, and Sir William Bayliss, as usual, ranges over a wide field of subjects. This volume contains two of his papers on the effects of hæmorrhage.

Questions Actuelles de Biologie Médicale. By G. H. ROGER, Doyen de la Faculté de Médecine de Paris; Professeur de Pathologie Expérimentale et Comparée; Membre de l'Académie de Médecine. Paris: Masson et Cie. 1924. Pp. 194. Fr.16.

THE seven essays contained in this book represent the conclusions of some of the author's researches, part of which have been already published as separate papers. Among the subjects treated are the lipolytic and detoxifying action of the lungs, various effects of injection of autolytic products of the lungs and of other animal extracts, the functions of the suprarenals especially with regard to their relation to the hypertension of cerebral embolism, the action of the liver on toxic substances, various researches on enzymes, and a chapter on the functions of the bile. This last is one of the most interesting in the book; one of the hypotheses advanced is that the bile counteracts an enzyme mucino-coagulase, and so inhibits the coagulation of mucin. In muco-membranous colitis, for one reason or another, coagulation of mucus occurs. As a whole the book provides highly entertaining reading, and one leaves it with a feeling of admiration for the author's ingenuity.

DIET FOR CHILDREN.

By CECIL WEBB-JOHNSON, M.B., Ch.B., Major R.A.M.C. (T.F.), late Civil Surgeon and O.C. Station Hospital, Dum-Dum. London: Mills and Boon. 1924. Pp. 128. 3*s*. 6*d*.

IT is not necessary to agree with their contents in entirety to find that Dr. Cecil Webb-Johnson's various works on diet contain much good common sense, so that their appeal to the lay reader, for whom they are intended, is justified. This is in many ways the best of his books; it shows a balance and a tolerance of opinions current among authorities on the scientific side of diet which have not always marked his previous works. He is still averse, though not so bitterly, to the use of milk. Though it would be easy to find fault with the scientific aspects of the book, it is one which is capable of being understood by those with no knowledge of science, and is likely to do much more good than harm.

New Inventions.

SPECIAL BOX FOR THE RADIANT HEAT TREATMENT OF INFECTED FINGERS AND HANDS.

THE use of radiant heat in treatment of infected fingers and hands has been mentioned by several authors,[1] and Messrs. John Weiss and Son have made a special box to my design for the hot-air treatment of such cases. The box is made of wood and is lined with asbestos and measures 13 in. by 10 in. by 7 in. Four long cylindrical carbon filament lamps give the heat and they can be supplied at the desired voltage. They are shaded by strips of asbestos to prevent any possibility of the lamp touching and so burning the hand. A thermometer has been fixed into the top of the box, so that the reading may easily be checked. The illustration shows the arrangement, the two

halves of the box being equal in size, and the whole apparatus is light and easy to use. The hand is placed in the box, which is then shut and securely fastened, and any gaps left around the wrist at the entrance to the box are closed with wool or a towel. The current is switched on and the temperature allowed to reach 120° F.—which it does in five minutes—and it is then kept at that level for 20 minutes. The advantages of this box are that it provides a small, light, portable heat-bath for the hand, that it can be used anywhere where electric current is installed, and it provides a method which gives admirable results in clearing up infections of the hand and preventing adhesions of tendons and stiff hands.

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Assistant Director, Surgical Unit, St. Mary's Hospital, London, W.

[1] See THE LANCET, 1924, i., 966.

THE LANCET.

LONDON: SATURDAY, JULY 19, 1924.

DILETTANTISM IN RADIOLOGY.

THE indictment against dilettantism in radiology, brought by Dr. AXEL REYN, which was endorsed by other speakers at a recent meeting in Copenhagen of the Danish Medical Society, sets out a difficult and extensive problem. "Who is to decide," said Dr. REYN, "between the dilettante and the skilled radiologist"?—and the following are the two questions that would seem to call for consideration under his general inquiry: Is there, in the present position of radiological science, a place for any but the skilled and trained radiologist? And if so, by what criteria shall the necessary distinction be made?

Probably no discovery in physics has ever created so widespread a commotion or evolved more immediate interest than that of Prof. ROENTGEN in 1895, the obvious reason being that the superficial results were so striking and so easily appreciated. From the earliest days following the discovery, with very inadequate apparatus, with little or no knowledge of the physics of the subject, and with no literature to guide them, scientific men, both lay and medical, began to experiment with the new rays. Many of these men fell victims to their own enthusiasm, and to a heroic spirit which kept them still pursuing when the dangers had become apparent while no safeguards had arrived. This early band of workers included the dilettanti of their time, and let us recollect that we owe to these pioneers the foundation of the science and practice of radiology. Of the earlier workers many, fortunately, are still with us, while the scientific aspects of radiology have been put on a sound basis and a mass of tested knowledge has come into existence. The first dilettanti have developed, many of them, into our leaders, and for them the foreign word possesses no disparaging meaning. But they are not the semi-amateurs to whom the speakers at the Danish Conference were referring, who divide themselves roughly into several classes between which discrimination has to be exercised. There is the man who, in the first instance, has taken up X ray work as a hobby, and who passes into specialism without adequate training and, to a great extent, without knowing what he lacks. He is not to be confused with the man who believes that he can purchase an apparatus of such simplicity that it is foolproof, but he none the less, and however unconsciously, represents badly the section of science which he essays to work at. There is also a most difficult class of radiologists to estimate in terms of professional utility. It is composed of physicians or surgeons who may be really wise and progressive, and who think that the interest of their patients may be served by their becoming their own radiologists. We need say nothing further of him who trusts to an instrument he does not understand. So quick will be the disillusionment that his class must always be a small one—the only fear is that its size should be magnified in popular opinion. Those who began by indulging a hobby will include both medical and non-medical persons, their existence may well be a danger, unless they are acting in a subordinate capacity and under very definite supervision. The consultant by doing all his own spade-work may lose something of his fineness of judgment and imitate the judge who plays the advocate. We know that there are exceptions to this generalisation, but any hasty or not absolutely necessary action by this group may give a very serious set-back to the growth of "team-work" in this country. This would be a calamity.

In the case of X ray therapy there is, we feel, nothing that can be said in favour of practice being in the hands of other than skilled and experienced men. If the present tendency towards the employment of more intensive therapy continues, the problems to be solved will be of magnitude. Even now it is impossible to exaggerate the necessity for careful selection of cases suitable for radiotherapy, and for the most precise indications as to dosage and definite skilled supervision during treatment. All these things imply not only special knowledge but experience, and they constitute the considerations which led to the institution of a special diploma in radiology. The interests of the patient above all, the difficulty of X ray diagnosis, and the great handicaps experienced by the early workers, were all factors in the minds of those who urged the advisability of special training. The University of Cambridge took up the matter with enthusiasm and laid down a course with a minimum of six months training, followed by an examination of sufficiently searching a nature to exclude the dilettante. The University insists upon a good grounding in the physics of radiography. No diploma of whatever nature can be regarded as more than a certificate implying that a candidate has learnt the elements of the subject, and for no other reason are they to be commended. The holder of a diploma in radiology is in a much better position to acquire experience than the man without it—that is the point to be remembered.

RATIONS FOR EXPERIMENTAL AND DOMESTIC ANIMALS.

AT first sight it seems an easy task to construct a dietary for animals on which they can be maintained in good health over an indefinite period of time—a maintenance diet as Prof. R. G. LINTON calls it in the special article which we publish to-day. The problem is one which is of considerable importance to breeders of animals. It also is of interest to those who have to maintain large numbers of animals in field laboratories for experimental purposes. Since economic conditions enforce dietetic restrictions on man, the problem has also an important bearing on human dietetics. It is implied in the problem that the diet must be an economical one, and one which can be readily administered. The choice of foodstuffs is therefore limited and variations in the dietary are excluded. It is this absence of variety which introduces the difficulty, for almost any one of the common foodstuffs, except milk, will result, if given alone over a long enough period, in a deficiency of either specific amino acids or of certain inorganic elements or vitamins. Such a deficiency may not be so severe as to produce obvious ill-health or disease, and may only reveal itself if the animals are kept over very long periods of time by a diminished fertility, by increased susceptibility to infections, or by slight pathological changes which are only found post-mortem when looked for, such as the bone changes discovered in monkeys kept in the Zoo. At present our knowledge on these points is very imperfect because most experiments on dietetics have been carried out only over very short periods of time.

Experiments lasting over several generations of rats, such as those carried out by W. CRAMER and published recently in our columns,[1] seem to indicate that slight deficiencies may become cumulative when they are allowed to last over several generations. For such experiments the rat is a particularly suitable animal because it is short-lived, and several generations can be submitted to experiment in two years. It has also the advantage of being omnivorous.

Another difficulty in experiments on nutrition arises from the fact that observations made on one species do not necessarily apply to other species in every detail. Obviously, carnivorous animals such as dogs differ in their metabolism from purely herbivorous animals. In a discussion on diseases of nutrition in the Section of Comparative Medicine of the Royal Society of Medicine some months ago,[2] Prof. E. MELLANBY maintained, as a result of experiments on dogs, that cereals, and especially oats, contained something of a toxic nature. He went so far as to suggest that on theoretical grounds the diet usually given to race-horses was not well adapted to produce fast runners. There is an old proverb that one man's meat is another man's poison, and it may be that what is oats for a horse is poison for a dog.

When we come to such laboratory animals as rabbits and guinea-pigs, with which Prof. LINTON does not deal in his present article, the general experience is that excess of greenstuff, together with oats and middlings or wheaten bran, is good maintenance ration. In an interesting paper, E. BROOK and J. TREVAN[3] showed two years ago that guinea-pigs fed on a diet of mangold, bran, and oats, suffered from an epidemic which was due solely to the diet and could be counteracted by adding fresh greenstuff to the diet. Rats do well on a diet of bread and milk with the occasional addition of raw carrots, greenstuff, or kitchen scrap. Oats do not seem to agree with rats, at any rate they do not readily eat them, while mice thrive on them if they are given together with bread and occasionally a little greenstuff.

ANTHELMINTICS.

DURING the last few years a vast amount of research has been published on the therapeutics, pharmacology, and chemistry of anthelmintics. Most of this is in connexion with the recognition of the great importance of hook-worm infestation in tropical countries and the necessity for a systematic campaign against it. Oil of chenopodium is the drug chiefly employed for this purpose. It is certainly effective against hook-worms, but its toxicity is rather high and the danger of this is increased by its variable composition. It was suggested by HALL and HAMILTON[4] that the toxicity of chenopodium oil was due chiefly to the less volatile fractions which contain a large proportion of an organic peroxide known as ascaridol, and that the more volatile fractions were found more efficient as an anthelmintic. They therefore suggested that it might be advisable to distil the oil and use only the more volatile fractions for therapeutic purposes. The work of HENRY and PAGET on the chemistry of chenopodium oil,[5] in conjunction with that of Dr. SMILLIE on its pharmacology and therapeutics,[6] shows, however, that the opposite is the case. The more volatile portion of the oil consists chiefly of terpenes of which cymene and α-terpinene are the more important, and the anthelmintic properties are attributed almost entirely to the ascaridol, the chief constituent of the less volatile fraction. This ascaridol is said to surpass the crude drug in safety and certainty of action. The reason of the discrepancy between these results and the previous work of HALL and HAMILTON is probably to be found in the instability of ascaridol on heating. If the distillation of the chenopodium oil is carried out at an insufficiently low pressure, there is a danger of decomposing the ascaridol so that the anthelmintic power of the oil is seriously impaired. In commercial samples of the oil thermal decomposition of the ascaridol may have taken place, and this may account for the wide variations observed in the ascaridol content (36–98 per cent.). In view of the dangers and toxicity of oil of chenopodium, some South American practitioners have abandoned its use altogether, while others suggest that it should only be administered when there are ample facilities for studying the case before and after administration. In this respect β-naphthol and thymol are advantageous, as they are readily obtained in a chemically pure condition, and though their anthelmintic power is considerably less than that of chenopodium oil or ascaridol, this is to some extent counterbalanced by their lower toxicity to the host and by the greater facility for exact dosage.

Recently, however, carbon tetrachloride has found a rapidly increasing favour in the treatment of hook-worm disease and threatens to replace oil of chenopodium, thymol, and β-naphthol for this purpose. Although it is definitely and strongly toxic, the balance of opinion appears to be that the therapeutic dose is safely below the danger-point. As it can be obtained in a comparatively high degree of purity it does not suffer, like chenopodium oil, from the defect of variable composition and uncertain dosage. Purity is an important essential, as impurities such as carbon bisulphide and phosgene are excessively toxic, the latter, in fact, being more poisonous than prussic acid. It is doubtful whether carbon tetrachloride acts as a true anthelmintic; more probably its action on the worm is that of a narcotic. On account of its poisonous action as an inhalation anæsthetic it should always be administered in hard gelatin or similar capsules so that it is liberated only in the intestines. It is claimed to be more efficient than chenopodium oil in the treatment of hook-worms and thread-worms. Although carbon tetrachloride has acquired a considerable vogue in the treatment of hook-worm diseases, its extreme toxicity should not be forgotten, and its action on the kidneys is a delayed one, so that it can hardly yet, in view of its short history, be regarded as a completely tried and safe drug. The economic factor has no doubt played a considerable part in its use for the wholesale treatment of hook-worms, as it is far cheaper than oil of chenopodium or thymol. It is probably this economic factor which has prevented a trial of santonin for the treatment of hook-worm disease. There appear to be no reports as to its action on these parasites, which is to be regretted, as it would be of great interest and scientific value to compare its action with that of chenopodium oil and carbon tetrachloride. Although its price at the present time might prevent its use in the large quantities required for this purpose, it, may, at some future date, be more readily available. For the ordinary round worms and thread-worms santonin is still the classical remedy. It has the advantage of being a definite chemical compound obtainable in a pure state, and hence capable of accurate dosage, and it differs from the great majority of anthelmintics in not being a gastro-intestinal

[1] THE LANCET, 1924, i., 663.
[2] THE LANCET, 1924, i., 229.
[3] Biochem. Jour., vol. xvi., p. 780.
[4] Jour. Pharm. and Exp. Therap., 1918, xi., 228–260.
[5] Jour. Chem. Soc., 1921, cxix., 1714–1724.
[6] Bul. Soc. Med. e Cirug. de S. Paulo, Brazil, 1922, vi., 331–342.

irritant, so that it is specially useful where repeated doses of an anthelmintic are indicated.[7] Its toxicity is small compared with its therapeutic power, although the personal idiosyncrasy seems to vary a good deal, as it also does in the case of chenopodium oil. From experiments on worm musculature, the anthelmintic action of santonin is attributed by LAUTENSCHLÄGER[8] and by TRENDELENBURG[9] to the lactone ring in conjunction with the aromatic nucleus, open chain lactones being inactive. They found that simple cyclic lactones such as phthalide and meconin were as active as the more complex santonin, but there is no evidence that these simpler lactones are of any therapeutic value, and experiments on the muscles of non-parasitic worms are not a very safe guide to anthelmintic value. Very careful and elaborate experiments of this kind were made on earthworms by SOLLMAN,[10] but these and the experiments of LAUTENSCHLÄGER and TRENDELENBURG do not indicate the specific action of anthelmintics over certain worms, and therefore cannot explain, for example, why santonin is active against round worms and not against tape-worms, while male fern is active against tape-worms and not against round worms. Recently, a preparation called santoperonin was introduced, which claimed to be chemically analogous to santonin and to male fern, and to possess the therapeutic properties of both, but actually it has not the least chemical resemblance to either of them, and its anthelmintic and therapeutic properties are extremely doubtful.[11] As a remedy against tape-worms the so-called pelletierine tannate seems to be the best. It is not a definite chemical compound but is the precipitate obtained by the action of tannin on the extract of pomegranate bark, and is therefore a mixture of the tannates of the various alkaloids present in the bark.

The pharmacology of these anthelmintics is still in a very undeveloped state. Most phenolic substances, for example, have some anthelmintic action, and this is not surprising in view of their irritant and toxic character. Any irritant or toxic substance probably has some anthelmintic action, and if unabsorbed by the gastro-intestinal tract might have some therapeutic value, but it would not be a specific anthelmintic and would be therapeutically inferior to drugs such as santonin, male fern, and pelletierine. Carbon tetrachloride probably acts as a general poison in this way. With regard to santonin, two conflicting views are often quoted without comment in text-books of pharmacology. According to SCHROEDER, santonin expels round worms without killing them, and according to KUCHENMEISTER it kills them more rapidly than any other drug. This apparent discrepancy is probably due to the insolubility of santonin. In conjunction with oil, such as castor-oil, as in the experiments of KUCHENMEISTER, sufficient is apparently dissolved to kill the worms, whereas the minute trace dissolved in the absence of oil (SCHROEDER) is sufficient to expel the worms without killing them. From this it appears evident that santonin is a true anthelmintic with a specific action on the round worms. The same may be said of male fern and pelletierine, in respect of tape-worms, a concentration of 1 in 10,000 of pelletierine killing tape-worms in ten minutes. When it is realised how resistant these parasites are to most anthelmintics, this specific action is the more remarkable, and further investigation as to its mode of action would be of the greatest interest.

[7] M. C. Hall: Studies on Anthelmintics, ix.
[8] Ber. Deuts. Pharm. Ges., 1921, xxxi., 279–291.
[9] Arch. Exp. Path. und Pharm., 1915, lxxix., 190.
[10] Jour. Pharm. and Exp. Therap., 1918, xii., 129–171.
[11] Report State Inst. Pharm. and Therap., Leyden, vi.

Annotations.

"Ne quid nimis."

ANNUAL MEETING OF THE B.M.A.

THE annual representative meeting of the British Medical Association opens to-day, Friday, July 18th, in the Examination Hall of the Technical College of Bradford, under the chairmanship of Dr. R. Wallace Henry. The printed agenda, which runs to nearly 150 items, includes such matters as indirect methods of advertising, legal liability in medical certification, and contributory schemes for private insured persons, which give promise of vigorous and profitable discussion. This meeting is expected to remain in session until Tuesday, July 22nd, when it is followed by the annual general meeting, at which the outgoing President, Mr. C. P. Childe, will induct his successor, Mr. J. Basil Hall, consulting surgeon to the Royal Infirmary, Bradford, who will then deliver the presidential address. The scientific sections will then meet concurrently on Wednesday, Thursday, and Friday, July 23rd–25th, and interesting subjects are set out on the provisional programme. The Section of Medicine, for instance, will take up cardiac irregularities, jaundice, and small-pox; the Section of Surgery will discuss acute osteomyelitis, pulmonary embolism, and auricular fibrillation; the Section of Pathology will have before it tissue culture, non-specific immunity, and protozoal intestinal affections. The annual dinner of the Association will take place at the Midland Hotel, at 7 P.M., on July 24th. A popular lecture on the Sun Cure will be delivered in the Mechanics' Institute by Sir Henry Gauvain on the evening of Friday, July 25th. The exhibition of surgical appliances, foods, drugs, and books, to be opened on July 22nd in the Windsor Halls, will give opportunity to members of the medical profession to see for the first time a number of new and ingenious inventions. The closing day of the meeting, Saturday, July 26th, has been set apart as usual for a variety of attractive excursions. The hon. local general secretary of the meeting is Dr. W. N. West Watson, Victor Lodge, Manningham, Bradford.

THE MEDICAL LESSONS OF A WAR.

THE last volume[1] of the Medical History of the Great War, which has just reached us, brings to a close a well-planned and quickly executed piece of valuable medical historical research. This volume merits the praise we gave to its predecessor[2]; it is a wonderfully clear statement of events as they occurred, compiled from a multitude of often conflicting reports from units involved in complicated and confused operations. It deals with many expeditions, each with its own trials: Gallipoli with its flies, the lack of water, and few hospital ships; Macedonia with malaria, mountains, and no roads; Mesopotamia with want of plan, and shortage of personnel and equipment; East Africa with its rain, tropical disease, and no natural main line of communications; Persia with its distance, its strange diseases, and thousands of refugees to feed, treat, and keep from spreading epidemics; Russia, a problem of swamps, snow, and uncertain allies. One outstanding lesson of this volume is that when an expedition is undertaken without careful consideration the first person to suffer is not the neglectful staff officer, though he may be brought to book later on, but the fighting man himself, who, because the medical corps has not been invited, nor given time, to do the best for him, gets unsatisfactory water or food when he is well, and not enough bearers or hospitals when he is sick or wounded. Were the staff, on active service, to take

[1] History of the Great War. Medical Services, General History. Vol. IV. By Major-General Sir W. G. Macpherson, K.C.M.G., C.B., LL.D. London: H.M. Stationery Office. 1924. Pp. 711 + xvi. 25s.
[2] THE LANCET, May 24th, 1924, p. 1060.

medical officers more into their confidence, telling them where and when the battle was to be, the wounded might be more quickly, more comfortably handled.

All the Regular officers of the R.A.M.C. as they read this book will realise how great is their responsibility, for on them hinges the evacuation of the wounded, and it is they who must firmly claim, from those above them, the personnel and material, the transport, sanitary sections, or what not, without which they cannot do their best for the soldiers trusted to them. Sanitary sections should accompany the very first troops of any expedition; they prevent diseases. Civil practitioners will find (at p. 601) that army doctors are not doing surgical operations all the time, but that the most useful service a medical officer may have within his power to do for the sick may be to see how many of 300 camels he can get to a particular place and where each camel will be able to take two wounded to hospital, for every camel lost means two wounded delayed. The last chapter on transport by stretcher and ambulance is a record of wonderful ingenuity, evoked by the vastly different conditions of the various theatres of the war. In France the wounded were removed in trench stretchers, in the mountains of Macedonia in travois, camels carried them in Palestine, sand carts in Sinai, country boats and river steamers in Mesopotamia, hammocks in East Africa, sledges in Russia. Trains and motor ambulances were always the most desired, but horse-drawn ambulances, with teams of four horses, still proved of value, for they can travel over fields and rough ground cut up by shells, where no motor ambulance can move. Air transport of wounded is not mentioned, although we are told of a medical officer who was carried some hundred miles in a seaplane in Russia to see a patient. An unexpected discovery of the war was the particular suitability of the educated native of Uganda for work in the medical corps. Enlisted mainly from the mission schools, and subsequently given the status of soldiers, a thousand of them were employed in small parties from Abyssinia to Durban; their non-commissioned officers were found fit to be put in charge of large groups of porters in a native hospital. Praise is also given to the undaunted conduct of an Indian field ambulance at Gallipoli, of the Egyptian camels and their drivers on the Sinai desert, and to the travois mules in Macedonia, all unperturbed by shell fire. The maps and pictures in the volume are most helpful; the statistics of illness would be more enlightening if in every case the numbers were given of the troops to which they refer.

The volumes, indispensable as they are, are too many for any officer to carry in his kit. A short but pregnant résumé of the series, a sort of Medical Officers' Pocket Book, would serve to make the lessons of the last war, often so hardly learnt, available to those who will have to struggle with the difficulties of the next. Details may then be different but principles must still count.

AN ENGLISH-SPEAKING OPHTHALMOLOGICAL CONVENTION.

IT has been decided by the Ophthalmological Society of the United Kingdom and its affiliated societies to hold in London next year a Convention of English-speaking ophthalmological societies and associations, and invitations have been issued to the presidents of all such bodies in the different parts of the British Empire and the United States of America asking them to appoint official delegates or representatives on the occasion. The date suggested is from July 14th to July 17th, inclusive, and the Convention will be inaugurated by a reception given by the President and Council of the Royal College of Surgeons of England at the College on the evening of July 13th. The programme for the four days' work has been already arranged. Each morning, two afternoons, and one evening will be occupied in the scientific work of the Convention. The Bowman Lecture will be delivered by Sir John Parsons, the chairman of the committee for scientific business and publication, there will be a discussion on the microscopy of the living eye, and selected speakers will also take part in a debate on the evolution of binocular vision. The rest of the time will be taken up by visits to various institutions of ophthalmological interest, while receptions have been arranged, a banquet and a garden party. Those taking part in the Convention who are not members of the Ophthalmological Society will pay a fee of £2, while for ladies accompanying members of the Convention, who wish to become associate members, the fee will be 10s. The President of the Convention is Mr. E. Treacher Collins, who can be addressed at 17, Queen Anne-street, London, W. 1.

THE STANDARDISATION OF DYSENTERY SERUM.

THE therapeutic value of antidysenteric serum is not a subject upon which anyone who had experience of epidemic dysentery during the war will have any doubts. Where serum was freely used excellent results generally followed. In most cases a polyvalent preparation was employed, and it is more than probable that had any monovalent serum been available even better results might have been obtained, since there is no definite evidence that the different types of dysentery bacilli produce a common and unique toxin. The standardisation of dysentery serum is a matter of some difficulty, and at the present time we are far from the realisation of the same accuracy of titration which is possible for diphtheria and tetanus antitoxins. The difficulties are both that of technique and that of inadequate information. We are unable to produce the same sharply marked animal results as with the two last-mentioned infections, and knowledge is hazy as to the undoubted toxicity of the dysentery bacillus. A recent work from the Kitasato Institute of Japan, published under the auspices of the League of Nations,[1] has made an attempt to narrow down the issues in this field, and to clarify the principles of the standardisation of dysentery serum. The authors of this paper concern themselves solely with the Shiga variety of bacillary dysentery, and as a first step towards the end in view have endeavoured to find out the best way of preparing a potent and stable dysentery toxin. They find that in broth cultures the toxicity rises pretty sharply for a couple of weeks and thereafter falls off again, the development of maximum toxicity corresponding to the development of a late alkalinity of the medium which reaches its maximum at about the same time as the toxin content. The toxin thus prepared is fairly stable, but by no means absolutely so. Its toxicity is well marked, 0·05–0·1 c.cm. being generally fatal to rabbits. It does not, however, appear to be as toxic as is an autolysed extract of the bacterial bodies. Having obtained adequately toxic preparations for the estimation of the protective powers of antitoxins, the authors proceeded to compare antisera prepared by the injection of a number of preparations. The experiments are not sufficiently numerous to give convincing results, but, with this proviso, it appears that serum obtained by injecting horses with fresh cultures of dysentery bacilli, suspended in saline, is likely to be more potent than that prepared by the injections of sterile toxins and broth cultures, both of which are more lethal to the animals than is the first-named preparation.

The actual standardisation of antitoxin was found to be fraught with great difficulties, not the least being the wide variation in individual susceptibility met with in the rabbits upon which the experiments were made. For example, one animal may be capable of withstanding several times the dose which

[1] The Standardisation of Dysentery Serum. League of Nations, Health Organisation. First report by Kiyoshi Shiga, M. Kawamura, and K. Tsuchiya. The Kitasato Institute for Infectious Diseases, Tokyo, Japan. Geneva. 1924.

is fatal to another animal of the same weight. In consequence of this the usual procedure of estimating the smallest amount of antitoxin required to neutralise a lethal dose of toxin was inapplicable and recourse was made to the method of estimating how much antiserum might be added to 20 average lethal doses of toxin without inhibiting its effect. In this way an estimate of the weakness of the serum is made rather than its strength. In spite of such modifications difficulty in making an exact estimation of the potency of the serum exists, although for practical purposes relatively accurate figures may probably be obtained. An attempt is made to separate the antibacterial and antitoxic powers of the serum, but with no very definite results, and it appears clear that further investigations are required to elucidate these two factors and the parts they play in the pathogenicity of *B. dysenteriæ*. It is interesting to note that the bacterial factor is the one most favoured for antiserum production, whilst a toxic filtrate is used in the estimation of serum potency. It would be well if more light were thrown upon the unity or individuality of these two factors. A further report upon the application of the findings of this first investigation to the standardisation of serum on a commercial scale is to be presented, as also are the results of its clinical employment.

INSANITY AND ART.

COMPARATIVELY few people know that lunatics paint pictures, hold their own exhibitions, and even have their work hung at the Royal Academy. These and many other interesting facts were told to the Art Lovers' League by Dr. T. B. Hyslop at Leighton House on July 8th, in a lecture entitled Disease in Modern Art. Dr. Hyslop, an artist as well as an alienist, confined his remarks almost entirely to the work of certified lunatics and showed a remarkable series of slides prepared from pictures which he had collected at Bethlem Hospital. Many of these illustrations showed no signs of disease, while others were mere jumbled masses representing people and other objects. One patient produced quite pleasing studies, but left out the faces of all his models. The progress of cerebral lesions was demonstrated in several sets of pictures. In one all objects became gradually more and more elongated, while in another the artist started by cutting the corners off his paintings and finally drew everything in circles which slowly diminished in size. At the close of his lecture Dr. Hyslop presented his valuable collection of lunatics' pictures and lantern slides to the Art Lovers' League.

CARE COMMITTEES FOR THE TUBERCULOUS.

THE Need and Organisation of Care Committees was the subject discussed at the final session of the Tenth Annual Conference of the National Association for the Prevention of Tuberculosis reported in our last week's issue. Lieut.-Col. J. A. Ellis, B.Sc., who had undertaken to collect for the Association all available data on this subject, pointed out that in many areas the whole of the tuberculosis service was in the hands of a solitary tuberculosis officer, who would welcome the formation of a care committee. Neither he nor the general practitioner could undertake to go out looking for disease. As many cases came under observation at a late stage enlightenment and education of the public were required, and the local authority should provide not only sanatoriums for suitable cases but also accommodation for advanced ones. The problem is not so difficult in a self-contained community like a county borough or a town as in rural areas. In one area the local authority gives 25 per cent. additional to all money collected by voluntary subscription. The care committee should not be too insular nor should it avoid publicity. The personnel of the committee should be comprehensive and the principles guiding its activities should be both social and economic—the physical requirements in the home; education in hygiene, personal and communal; distribution of extra nourishment and clothing; coöperation with existing organisations, such as the National Health Insurance, War Pension Committees, &c., and the finding of employment—all these activities might be undertaken by care committees. In short, all anti-tuberculous work should be extensive, intensive, continuous, and timely; the advantages of publicity should not be neglected. A national survey of certain areas on the lines of the Framingham experiment[1] was recommended.

The discussion laid bare several difficulties of organisation. For example, to obtain information as to the existence of tuberculosis in a family among whom it is desired to place a child is not easy; to persuade employers to find work for the tuberculous is even harder. This is not surprising, for healthy men do not like working alongside the tuberculous for fear of infection. The dangers of asking too many questions and thus arousing hostility were emphasised by one speaker, and of conducting public health propaganda directed against one disease alone by another. Dr. Macdonald (Battersea) explained that in many places the care committee is a separate entity, divorced from the dispensary instead of being an indispensable part of it. His view was that if the care committee and the dispensary were adequately staffed, and one paid secretary acted for both, better coördination would result. Some speakers highly commended the work done by the care committee; others praised the good services of the health visitor, and held that money should be spent on the extension of this aspect of the work rather than on care committees. Adequate representation on every care committee, of friendly societies and of trade-unions, and a closer coöperation between medical and lay members was one of the suggestions made for increasing the value of these committees, which we can heartily endorse.

HEALTH IN THE COTTON INDUSTRY.

THE 1923 report of Dr. W. A. Daley, the medical officer of Blackburn, draws attention to the health of operatives in this centre of the cotton industry. Blackburn comes out well in comparison with other towns in housing matters; of 31,425 separate dwellings, 30,405 were occupied by one family only, and the percentage of persons living more than two to a room was the lowest in the county. The proportion of females to males, 1197 to 1000, is the largest of the industrial towns of Lancashire. During the last decade the total population has decreased; between 1911 and 1921 the number of male textile workers declined from 15,896 to 11,701, and of female from 25,913 to 24,999. One of the changes which has taken place is the increasing employment of married women in the cotton mills. Their numbers have risen from 9448 in 1911 to 9684 in 1921. Blackburn now has a larger proportion of married women industrially employed than any other Lancashire town—viz., 56 per cent. of those under 44 years of age and 22·9 per cent. of those over 44 years. Like other towns where married women are extensively employed in the factories, Blackburn has a low birth-rate, a high neonatal and infant mortality, and it is one of the towns specially referred to in Dr. Janet Campbell's recent report as showing year by year a very high mortality among mothers due to child-bearing. The number of still-births is also high, the rate for 1923 being 5·4 per 1000 registered live births, as compared with the average for the county of about three. Dr. Campbell says that return to work after the birth of a child is not as a rule long delayed, and that there is comparatively little breast-feeding. Rickets, she says, was very prevalent 20 to 40 years ago, and contracted pelvis is not uncommon in women from 20 to 40 years of age. It is not surprising to find that Dr. Daley associates the high maternal mortality from childbirth with the employment of so many married women in

[1] See THE LANCET, 1924, i., 1213.

industrial occupations. It would seem likely that the high stillbirth-rate and the high death-rate of infants under one month and one year are due to the same cause. There is no need to labour the point that a low rate for breast-feeding means a high infant mortality-rate.

Another point affecting the health of the cotton operatives dealt with by Dr. Daley is of very great interest—namely, the effect on health of artificial humidity. He has been unable to compare the health of two populations of cotton operatives living and working under similar conditions with the one exception of the provision of artificial humidification of the work-place. Dr. Daley has, therefore, done the best he could by comparing the death-rates among various classes of cotton operatives who live in Blackburn and are subject to the same environmental and general conditions of life outside the mill. He divides the operatives into four classes—viz., weavers, spinners, winders and warpers, and card-room workers. Recent figures show that female weavers have the best vital statistics. The conclusion to be drawn from the figures, says Dr. Daley, is "that, so far as the death-rates show, weaving in humid sheds such as there are in Blackburn is healthier than the other branches of cotton manufacture as carried out in this town." This result is somewhat surprising in view of the teaching of Prof. Leonard Hill which is now being generally accepted. Dr. Daley suggests no explanation beyond the conjecture that the result may be due to the small amount of dust which is to be found in these humid atmospheres.

THE VAGARIES OF SURGICAL TUBERCULOSIS.

IN the paper by Mr. R. V. Dolbey and Mr. A. W. Mooro, published in THE LANCET of June 7th, there is much evidence to show that surgical tuberculosis among the Egyptians differs considerably from the disease as we know it in this country. Tuberculosis in general—surgical tuberculosis in particular—is the greatest scourge in Egypt, and among the poor urban population 80 per cent. of the gross tuberculous disease of the bones, with abscesses and mixed infection, terminate fatally. As a rule, the disease takes about 18 months to kill. Little wonder therefore that amputation is regarded in Egypt as the safest and best functional operation for mixed infections of the limbs. If we compare this paper with one recently published by Mr. G. R. Girdlestone,[1] it is impossible to avoid the conclusion that not only does tuberculosis vary greatly in its behaviour in different countries, but that even the elementary principles underlying the treatment given in different institutions show a remarkable lack of uniformity. Does this lack of uniformity credit us with a versatility that is appropriate to a disease itself infinitely varied in its manifestations, or must we confess that the polymorphism of our treatment betrays ignorance of the fundamental requirements of the sufferer from surgical tuberculosis? It is exceedingly difficult to compare the merits of different treatments by the results obtained, for "results" are usually published too early and, as Mr. Girdlestone points out, "a cure in one hospital's register may be a very sick patient in another hospital's bed." In surgical, as well as in pulmonary tuberculosis, there seem to be differences of opinion as to the respective merits of mobilisation and immobilisation, and while Dr. Rollier of Leysin aims at mobility, many English surgeons are thankful if they can obtain immobility with permanent arrest of the disease. Again, in the matter of cold abscesses, Sir Henry Gauvain at Alton aspirates frequently and often injects alterative fluids, whereas Dr. Rollier and Mr. Girdlestone aspirate a cold abscess only when it threatens the skin. Many other instances could be given of divergencies of teaching in the most prominent tuberculosis centres throughout the world, and one may be inclined to suspect that the decline in the incidence and severity of tuberculosis in many civilised communities at the present time may not be solely due to the almost infinite ingenuity of man, but also to factors over which he has a very limited control. It is, indeed, almost impossible to avoid this conclusion when we compare the fate of the average patient in Egypt with that of his fellow sufferer in certain European countries.

[1] Tubercle, July, 1924.

THE LATE PROF. R. W. LOVETT.

WE have already had occasion to chronicle the death in this country of Prof. R. W. Lovett, of Boston, U.S.A. Robert Williamson Lovett was born in 1859, and was a graduate both of Harvard College and the Harvard Medical School. At a comparatively early age he was appointed to the junior surgical staff of the Boston Children's Hospital, and for a time acted in a similar capacity at the Boston City Hospital. The latter association was a passing phase; it was the children's hospital which provided him with those special opportunities which he was to utilise with such great distinction. At the hospital Lovett was for some years the junior colleague of Dr. E. G. Bradford, who occupied the position of surgeon-in-chief, and who was first responsible for the somewhat revolutionary move of dividing the surgical side of the hospital into two services—one dealing exclusively with orthopædic surgery and the other embracing what was left over, and for want of a better term labelled "general surgical." This was the real beginning of the now renowned Boston school of orthopædic surgery, which was fortunate enough to earn local recognition at an early date in the form of the creation of a professorial chair in this subject at Harvard. Lovett succeeded to the chair after the retirement of Bradford, and continued to add to the prestige given it by his most distinguished senior colleague. Their names were inseparably coupled in the many activities concerned with the growth of a special surgical school, and particularly in connexion with the well-known text-book of orthopædic surgery which they published in the early 'nineties. When Lovett attained the rank of surgeon-in-chief to the Boston Children's Hospital he soon became its most dominant figure, and his influence and leadership were manifested in the wider spheres of hospital organisation, the affairs of the Harvard Medical School, and of American surgery. He was the absolute antithesis of the hospital surgeon endowed with technical ability and little else; his achievements emphasised again and again the futility of appointing to high executive positions either the pure craftsman or the academic scientist. Two years ago, when Lovett was prepared to relinquish the arduous duties of his hospital and teaching chair, it was felt that he could not be allowed to retire altogether as he was then at the zenith of his experience, influence, and power. His successor, Dr. R. B. Osgood, was appointed to both offices, but the chair was duplicated and the professorial title was still held by Lovett at the time of his tragic death. Lovett was a fine clinician and teacher and, above all, a master organiser. As an operator he was not naturally dexterous, but he took infinite pains and care with each operation, no matter how small, and thus was able to obtain very good results. It was his custom to pick out from time to time a series of cases of a given type and to operate on these himself, the experiences forming the basis of future critical pathological or end-result studies. But he distributed the large share of the operative work of his clinic to his associates. In consequence he was able to attract and—more important—to retain on his staff a group of comparatively senior men to whom he accorded a large measure of anatomy. In this respect he was the great surgical "Meister," but—happily for his associates—not in the accepted continental sense of the term. The communications to the literature of orthopædic surgery which have emanated from the Boston Children's Hospital bear witness to the strength of this type of surgical organisation. Lovett's own personal contri-

butions were many and varied, but on the subject of scoliosis and infantile paralysis his knowledge was unrivalled. He began his observations on scoliosis many years ago, and he never lost his interest in a problem which to many has always seemed arid and, from a therapeutic point of view, insoluble. His monograph on this subject is, of course, classical. In 1916, when the epidemic of acute anterior poliomyelitis first assumed devastating proportions in certain of the Eastern States of America, Lovett's active mind at once turned from the conventional problem of the individual deformed patient of the later stages to the handling of patient en masse at the inception of the disease, with a view to the complete prevention of deformity. In the State of Vermont he was officially placed in control of the cases as they occurred, and early and correct treatment was instituted on a large scale. The Harvard Infantile Paralysis Commission was later organised to deal specially with adults attacked by this disease. From this unique clinical experience our knowledge has been enriched in a number of contributions published during the past few years and crystallised in the chapter on infantile paralysis in the great text-book which Lovett issued last year in collaboration with Sir Robert Jones, at whose house he died. Our sense of personal loss is heightened by the remembrance of Lovett's generosity in affording opportunities to some of the younger British surgeons of working in his clinic at Boston.

IT is announced in Army Orders that with effect from April 1st, 1925, the examination of majors of the Royal Army Medical Corps for promotion to lieutenant-colonels will consist of a written examination in army medical organisation and administration in peace and war, and of a medical staff tour.

A DANISH seaman with a black skin has recently been the subject of a very thorough investigation at Guy's Hospital. The condition which, although very rare, has been the object of previous study, is characterised by (1) exfoliative dermatitis, with progressive pigmentation of the skin; (2) intense hyperidrosis; (3) mental symptoms, of which delusions are the most frequent evidence. The mental condition of these patients impedes investigation of these cases in the wards of a general hospital.

Dr. David Murray Lyon has been appointed by the University Court of Edinburgh to be Christison Professor of Therapeutics in succession to Prof. J. C. Meakins, whose appointment as director of the medical clinic established through a grant of the Rockefeller Foundation in McGill University, Montreal, we announced recently. Prof. Murray Lyon was associated in his work with Prof. Meakins in the Royal Infirmary of Edinburgh, where he was appointed assistant physician in 1919.

INDEX TO "THE LANCET," VOL. I., 1924.

THE Index and Title-page to Vol. I., 1924, which was completed with the issue of June 28th, will shortly be published. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2. Subscribers wishing to receive the Indexes regularly as published should indicate this desire.

THE LANCET OF FEB. 2ND, 1924.

THE Manager of THE LANCET would like to purchase copies of the issue of Feb. 2nd, 1924, for which subscribers may have no further use. He will be pleased to pay 1*s.* each for them. Such copies should be addressed to him at 423, Strand, London, W.C. 2.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

LXXX.—TREATMENT OF MYOPIA IN YOUNG CHILDREN.

IT is astonishing how deep-rooted are the prejudices and old fallacies about myopia in the public mind and often, unfortunately, in the minds of many practitioners as well. The commonest of these is that short-sighted people get better as they get older, and that therefore myopic eyes are very "strong." Both these fallacies arise from the fact that it is generally considered a sign of weakness to be compelled to wear glasses, and since the presbyopic correction after 45 counteracts to a certain extent the myopic correction, myopes at and after this age usually find that they are able to read without glasses. Such reasoning seems entirely to ignore the fact that the distant vision remains exactly the same as it was before and depends for its perfection on the use of distance glasses, by which alone the degree of myopia can be measured. These fallacies tend to encourage parents to be careless in bringing their children for advice, or in carrying out the treatment, while it leads the practitioner to hesitate in expressing his opinion and sticking to it. It is therefore vitally important to bear in mind the many causes which contribute towards the development of myopia.

Causation.

There are various factors in the causation of myopia, but the commonest, at any rate in children, is what is known as axial myopia or abnormal length of the eyeball. This is sometimes congenital, but more often develops during the earlier years of child life, and is liable to increase up to the age of about 22. This lengthening of the eyeball takes place at the posterior pole of the eye, and if this distension occurs either quickly or gradually there comes a point when the choroid and retina, which should normally be closely adherent to the posterior part of the sclera, become thinned, split, and finally rent to such an extent that gaps are formed in these structures and so-called atrophic patches are found at the macula; the stretching round the optic nerve gives rise to the myopic crescent and staphyloma, often a useful guide to the degree of progression. Thus the vision is seriously affected. Also in after life the vitreous is liable to become fluid, the change being due either to inherent changes in its structure or to some interference with the character of the fluid secreted by the ciliary body; this may lead to shrinkage, and thus detachment of the retina is liable to occur following any excessive muscular effort, and occasionally the lens becomes opaque and cataract develops. In my experience it is not common for such serious pathological changes to happen in young life, but the progression takes place at this stage and the pathological changes may develop later. The very fact that the eyeball bulges posteriorly is evidence of weakness of the scleral envelope, which is probably due to defective nutrition for reasons connected with the health, but the determining factors which contribute to this distension is a subject of some difference of opinion. Although many arguments can be advanced against it, the generally accepted view is that close application to near work for a length of time is largely responsible; owing to the fact that the extra-ocular muscles are attached to the globe they are liable to press on the eye when put into action. No movement of the eyes is a simple one, and in order to maintain the eyes in one position for any length of time many of the muscles jointly take part in the action and a sustained pressure is thus induced. Reading at near range results in such combined action, and the muscular tension, being imparted to the eye in the presence of a weak sclera, encourages the posterior pole, which is unsupported, to give way. It is doubtful whether

accommodation has much to do with the production of myopia, but the irregular accommodation required in astigmatism may have some influence. Progressive myopia may occur without the patient being aware of it unless he wears glasses regularly.

The possibility of the occurrence of all these changes and possible influences must be present in the practitioner's mind when he approaches a case of myopia in a child, however remote the changes may be, or however unlikely they appear to be at the time of the examination.

Symptoms.—There are very few symptoms associated with myopia. There is hardly ever any asthenopia unless the short sight is associated with some muscle-balance defect, and practically the only complaint that patients make is that they are unable to see properly in the distance. This is by no means always the case, as many myopes will express themselves perfectly satisfied with their distant vision, and often object to wearing glasses on this account.

Management of a Case.

In children the refractive error should be carefully measured under a mydriatic, and the glasses ordered should be the lowest strength with which the patient can see 6/6 binocularly. It will be found that this represents a strength slightly lower than is accepted monocularly. In no case should a myope be over-corrected; this is a serious error. On the other hand, the old prejudice against ordering full correction in cases of myopia of any degree is entirely unjustifiable. This fallacy is founded on the assumption that full correction glasses necessitates a full amount of accommodation for near work and that this conduces to progression. But it is doubtful whether accommodation plays any part in the causation of myopia, and in many myopes the accommodation is certainly as strong as in emmetropes, though in several cases of high degree it has been proved to be atrophic. Many people are perfectly happy in full correcting glasses, while others describe various discomforts from wearing them which they seem unable to ignore or get accustomed to. Each case must be judged on its merits. I always encourage patients to begin with full correction; the strength can always be reduced later if necessary.

Glasses should be worn constantly by myopic children, as by this means their visual acuity is maintained at full normal (if 6/6 vision has been obtained); they quickly become aware of any departures from this standard and thus become conscious of the first signs of progression; whereas the changes in visual acuity at near range are not so noticeable, as the necessity for reading at a slightly shorter range than has been customary does not make any impression. Full correcting glasses also enable children to read at the most suitable distance (viz., 12 to 18 in.) which they otherwise might not be able to do, and this is much less straining for the eyes. No reading glasses should ever be ordered in young people unless it is proved on examination that they are unable to read J. with their glasses and yet can see 6/6. This indicates that the accommodation is weak, and under these circumstances reading glasses may be ordered temporarily; when the power of accommodation improves they can be discarded.

Very high myopes almost always prefer not to have full correction, and often are not comfortable except with three or four dioptres less, but even in such cases a trial with full correction should be made, and some patients are anxious to wear such glasses. The only objection is the heavy weight of the glass in the spectacle frame. Parents are often very averse to their children wearing glasses, and myopes themselves are particularly disinclined to use them, even though they realise that their visual acuity will be improved thereby. Under such circumstances the practitioner must remain firm in his opinion, especially in the case of children.

The general advice given to myopic patients is directed towards preventing the constant application of any kind of near work for any length of time. A proper form of desk for writing purposes should be advocated, so that the patient is compelled to sit up and keep at a reasonable distance; a good light is essential, so as to avoid the alternative of putting books and work close to the eyes in order to secure a larger image, and no small print or fine needlework is permissible for the same reason. Reading in bed is not bad in itself, but only because the position of the light is usually utterly unsuitable for comfortable reading: lying on the side only causes the eyes to be maintained in an abnormal position and necessitates the unnatural muscular action which is so bad for myopes. It is an important matter to discourage continuous application in reading and sewing, but to arrange for definite periods of rest alternating with periods of work.

In cases of definite progression, such as one or two dioptres in six months, the question of discontinuing all reading and school work has to be decided, and this becomes a serious matter in children who have reached an important stage in their education, but before taking this serious step all pleasure reading can be forbidden as a preliminary measure. Near work need not be curtailed merely because a patient has high myopia; it is the signs of progression that matter. It is of the greatest importance in all cases of myopia in children to pay particular attention to the general health, since the weakness of the sclera must not be lost sight of as one of the predisposing causes. When high myopia has become stationary reading may be permitted but physical over-exertion must be avoided, as in this way detachment of the retina is encouraged.

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Special Articles.

THE MAINTENANCE RATIONS OF ANIMALS.

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A MAINTENANCE ration may be described as that which will keep an animal that is in a resting non-producing condition and in good health in the same condition and at the same weight *for an indefinite period*. A diet that keeps an animal at a constant weight and *apparently* in good health for a short period is not necessarily a true maintenance ration. For example, certain monkeys kept in confinement in a zoo which are accustomed under natural conditions to a varied diet, including insects and grubs, may live for a considerable time in confinement on a diet of mixed fruits and nuts. When eventually these animals die, post-mortem examination not infrequently reveals a hitherto unsuspected osteomalacia, evidence that the diet has been deficient. It is therefore to be assumed that long before symptoms of illness became evident the animals had been living in a condition of "half-health," hence one would not be justified in regarding this diet as a maintenance ration, notwithstanding the fact that it does maintain life even to the extent of several years.

In connexion with the domesticated animals in many cases it is very difficult to say what really constitutes a true basal ration if it is agreed that the diet must maintain health for a long and not short period. There are many factors which have to be taken into consideration, any one of which, if neglected, may tend to lower the health-level of the animal. Every basal ration should be constructed so as to allow for sufficient exercise, as a certain minimum of exercise is essential if health is to be maintained. The writer, when feeding oats stained with methylene-blue to horses for the purpose of determining the rate of passage of food through the intestine, found that a few minutes' walking exercise round a yard caused the fæces to be evacuated several hours earlier than

when the same animals were kept standing tied up in a stall. Dogs accustomed to regular exercise, and thus regular evacuation of the rectum and bladder, when kept confined in a cage fail to get rid of their waste products as soon as they should, and thus real health is not maintained. It is well known that cattle and horses when conveyed by ship, even for a short distance, show a gain in weight out of proportion to the amount of food they could have digested. This temporary increase in weight is due to the accumulation of indigestible food and waste products in the intestinal tract. This is a very important point to keep in mind when carrying out feeding experiments with animals confined in cages, for this delay in evacuation of residual matter, if continued for an appreciable period, is bound to have a detrimental effect on the health of the animals.

Requirements for a Basal Ration.

The requirements for a proper basal ration for animals may be summarised as follows: (1) The net caloric intake must be equivalent to the basal fasting katabolism, together with an allowance for the increased metabolism due to the specific dynamic action of the food consumed. (2) It must supply sufficient net energy for adequate exercise. (3) Additional metabolisable energy may be required simply for the purpose of supplying heat in the case of animals where the critical temperature is of practical importance. (4) There must be sufficient protein to equalise nitrogen outgo. (5) There must be sufficient "coarse" food in the ration to open out the concentrated food and thus allow the free access of digestive juices. (6) An adequate bulk to the ration is necessary to cause the optimum distension of the stomach and intestines necessary for proper digestion, and to give that sense of repletion without which the animal will not be contented. (7) The protein and non-protein constituents must be in proper proportion the one to the other, as also must the fat to the protein, for the optimum digestion of the food to take place. (8) There must be a properly balanced and sufficient mineral supply to ensure a normal ionic concentration. (9) The food must be suitable for the particular species of animal. (10) An adequate supply of vitamins is essential. (11) Finally, the food must be palatable.

Neglect to study the above points when formulating rations, especially when the object of feeding an animal is to conduct a feeding experiment, may be the cause of very misleading results, and it should be remembered that whilst animals possess a considerable flexibility in their capacity to utilise strange and unnatural foods, this power to acquire tolerance is not unlimited.

Maintenance Requirements of Horses and Cattle.

Maintenance requirements of farm animals are sometimes expressed in terms of *net energy*, which is equivalent to Kellner's production starch equivalent, or, on the other hand, in terms of *gross digestible energy*, which is equivalent to Armsby's *metabolisable energy*, or the so-called maintenance starch equivalent. The caloric value of 1 lb. of metabolisable energy expressed as starch is 1710 Kilo-calories (C.); that of 1 lb. of net energy expressed as production starch equivalent is 1071 C.

In accordance with our conception of a true basal maintenance ration, the requirements for the maintenance of a horse have been studied by many interested in animal nutrition. A critical study of the investigations that have been made to this end has been provided by Armsby in his "Nutrition of Farm Animals."[1] Armsby accepts the finding of Zunts and Hagemann, which is that for an animal weighing 1000 lb. there is required a total of 11,900 C. of metabolisable energy made up as follows:—

Net energy for internal work	4,100 C.
Additional required for heat production	7,800 C.
Total metabolisable energy	11,900 C.

This caloric requirement is not taken to mean the physiological minimum but an economic minimum.

In 1917[2] I estimated the maintenance requirement for horses and, basing my calculations on a study of former investigations and on the rations given in practice, suggested that a total of 13,000 C. of metabolisable energy would meet the demands of a 1000 lb. horse—that is, a light draught horse—where the temperature of the surrounding air was not too low, and provided that the ration contained sufficient net energy for physiological purposes. It was also assumed that this 13,000 C. would allow for the minimum of exercise required to maintain health.

It would appear, however, to be very difficult, if, indeed, it is not even impossible, to fix with any high degree of accuracy the maintenance requirements of horses and to express them in terms of calories. This is so for two reasons: first, because there is such divergence between the findings of the various investigators as to what constitutes a maintenance ration; and, secondly, because we have but rudimentary knowledge of the real caloric value of the different foods for these animals, either when fed as single foods or in combination, as when a composite diet is given, as, for example, hay, straw, and grain. It is well known that the digestibility, and hence the net energy value, of foods varies according to the combination in which they are given.

When calculating the rations of horses, it has been commonly assumed that the same food has an equal value for both the ruminant and the horse, and though Kellner himself says that his "starch values" may be applied to both horses and ruminants, this is doubtful, at least with a number of foods. Indeed, Armsby gives a much higher value to some foods for the horse than he does for ruminants, so that as some people use Kellner's figures and some Armsby's, it is not surprising that conflicting results are obtained.

If we assume Kellner's deductions to be correct and that 6·6 lb. of "starch" will satisfy the demands of a resting horse weighing 1000 lb., then 16 lb. of "good" quality meadow hay will constitute a maintenance ration so far as its energy value is concerned, since this quantity of hay has a metabolisable energy of 12,483 C. and a net energy value of 5355 C. We know in practice that 16 lb. of hay is fully as much as an animal of this size could eat in a day. If we refer to any published tables of food values we find that, while it is stated that 16 lb. of "good" meadow hay has a net energy value of 5355 C., an equal quantity of "very good" meadow hay has a net value of 6954 C. So that here we have a difference of 1600 C. in a diet of 16 lb. of hay, according to whether the feeder classes it as good or very good. To illustrate still further what confusion exists regarding food values for animals and their application when an attempt is made to construct a diet on "scientific" lines, we may refer to an example of a maintenance ration for a bullock given by Prof. T. B. Wood in his recently published "Animal Nutrition."[3] On p. 169 Wood quotes Kellner's figure for the net energy value of barley straw at 209 C. per lb. and Armsby's figure at 366 C. per lb. Accepting the latter figure which, as he says, was determined much more recently, Wood considers that 17 lb. of barley straw will supply sufficient net energy for the maintenance requirements of a 9 cwt. bullock, that is, 6000 C. of net energy. (This ration is, of course, deficient in protein, as Wood points out.) In subsequent pages, when compounding rations containing barley straw for bullocks, Wood makes use of Armsby's figure, but in his table of food values leaves the agriculturist to construct his rations from Kellner's figure which is the one, rightly or wrongly, that is in general use. What this difference in values means is made clear when it is understood that if Armsby's figure is used then 16·5 lb. of barley straw will presumably supply the 6000 Calories required, and if Kellner's be utilised, then no less than 28·7 lb. will be necessary. If Armsby's figure is right then Kellner's must of necessity be wrong, and as dairymen have been in the habit of constructing "scientific" rations for their cows from Kellner's figures they will be

perturbed at finding their careful calculations liable to so great an error.

Fallacies to be Avoided.

Attention is drawn to the above simply for the purpose of emphasising the danger of utilising values that are assumed to be correct. When we consider still further the great variation that exists in the quality of the foods given to animals, the divergence in views among those who have studied animal nutrition as to the energy required for maintenance, the fact that in many instances food values, such as they are, for ruminants are assumed to be applicable to the horse and, indeed, even to the pig, and many other conflicting assumptions, one is naturally led to ask, how is one to determine what are maintenance rations for the various domesticated animals? It would appear to be necessary before conducting a feeding experiment for the purpose of determining a fine point in animal nutrition to find out the maintenance requirements for each animal for the particular food used. This can only be done by careful and prolonged experiment.

Having determined the maintenance requirements of an animal of any given weight, those for other animals of the same species but different weights may be calculated approximately by means of the well-known surface law of Rubner. Though not sufficiently accurate for experimental work, this method may be applied to every-day use provided that it is not interpreted too literally. A considerable margin for error must be allowed. Estimates of the weights of horses are often exaggerated. The writer found the weight of British army horses in good hard-working condition, not fat, to be as follows: Heavy draught mules 1350 lb., heavy draught horses 1300 lb., light draught horses 1150 lb., light draught mules 1100 lb., riders first class 1075 lb., and riders second class 975 lb. The average weight of heavy draught horses kept in a fatter condition than those in the army is 14 cwt. It is an exceptional animal that weighs over 16 cwt., though some approach a ton in weight.

A maintenance ration for horses that in the past few years has been well tested is that laid down by the Ministry of Agriculture for horses exported from this country to Europe. For horses of the larger type this is 15–20 lb. per day, for smaller animals 10–15 lb., and for small ponies and asses 5–10 lb. The average weight of these animals, excluding small ponies, is 11 cwt. Some few months ago the writer had a consignment of 22 horses weighed immediately before embarkation and again immediately after disembarkation at Antwerp. Every horse showed a marked increase in weight, and while, as stated before, this increase is in part undoubtedly due to incomplete evacuation of the intestinal tract, it at least indicates that the quantity of hay consumed was not below maintenance requirements.

The Maintenance Ration of Dogs.

The constitution of a healthy dog's normal maintenance ration has received much consideration from veterinary surgeons. It might be thought that the natural diet of the wild dog—flesh, blood, fat, and bones—would also be suitable for dogs kept in partial confinement under domestic conditions. Such a diet, however, is not economical, and experience has shown that it is not necessary. It has also been found that an exclusive diet of flesh does not give as good results as a mixed diet containing a proportion of carbohydrate for dogs doing hard and prolonged work, such as hounds and sheep-dogs, notwithstanding the fact that the dog is naturally a carnivorous feeder. Pariah or scavenger dogs of the East are, as is well known, omnivorous feeders, of necessity if not by choice.

A good test of the efficiency of a maintenance ration for dogs kept in more than usual confinement can be made with the diet allowed to dogs kept in quarantine for a six months' period. Many dogs representing most breeds have passed through the quarantine kennels of the Royal (Dick) Veterinary College. The amount of exercise is limited to bi-daily freedom of half an hour or so in an open court. With the exception of one dog, a West Highland terrier, which arrived with an eczematous condition of its skin, all the animals have completed the six months' period in excellent health and without becoming fat. The daily ration of these dogs consists of dog biscuits and horse-flesh. The dog biscuits are made from bakers' "seconds," mutton greaves ("cracklings"), and boiled horse-flesh, to which is added a percentage of salt. The horse flesh is obtained from healthy horses that have been shot and bled. The ration is divided into two parts; in the morning a dog biscuit is given dry and at 4 P.M. a larger feed is given consisting of broken biscuits soaked in hot water and mixed with par-boiled horse-flesh. The heavy feed is given in the evening in order to keep the dogs quiet during the night. From our experience we conclude that it is better to feed dogs twice during the day instead of once according to the popular idea.

The allowance for an Airedale or collie, weighing approximately 27 kilos, was weighed and analysed. The dog biscuit weighed 380 g., and the fresh unboiled horse-flesh 170 g. The analysis of each was found to be as shown in Table I.

TABLE I.—*Analysis of Dog Biscuit and Horse-Flesh.*

—	Biscuit.	Horse-flesh.	Total in ration.
	Per cent.	Per cent.	Grammes.
Water	15·73	74·94	—
Fat	2·28	2·60	13
Albuminoids	16·62	21·00	99
Carbohydrates	62·89	—	239
Fibre	1·10	—	—
Ash	1·38	1·08	—
Not accounted for	—	0·38	—
	100·00	100·00	351

For the above analyses the writer is indebted to his colleague, Prof. G. H. Gemmell, F.I.C.

This ration, which the clinical department of this College has found by experience to be suitable for adult dogs weighing about 24 kilos and not getting more than sufficient exercise to keep them in good health, was fixed upon without reference to any former investigation undertaken to determine a satisfactory diet. It is, therefore, particularly interesting to compare it with the rations for dogs suggested by Dechambre.[1] Dechambre published the results of his investigations in 1919, and stated that he considers that maintenance requirements for the dog can be calculated according to the surface law, as is the case with other animals. He published a table setting out the maintenance rations for dogs from 5 to 100 kilos in weight and also gave rations suitable for dogs doing moderate and hard work. For a dog of 27 kilos, such as an Airedale or collie, he allows for maintenance: Protein 55 g., fat 15 g., and carbohydrate 300 g., giving a total of 388 nutritive units reckoned on the formula (total protein + total carbohydrate + total fat × 2·2). The compared rations in grammes, therefore, are as given in Table II.

TABLE II.—*Prepared Ration in Grammes.*

—	Protein.	Fat.	Carbohydrate.	Total nutrit.ve units.
Dechambre	55	15	300	388
R. (D.) V. C.	99	13	239	367
Difference	+44	−2	−61	−21

A comparison of these two rations shows that there is a close similarity in the total nutritive units supplied, but the diet given in this College contains nearly twice as much protein as that recommended by Dechambre and considerably less carbohydrate. The total protein allowed by Dechambre for hard-working dogs of 27 kilos weight is 100 g. As the

380 g. of dog biscuit contains 63 g. of protein, it might be assumed that the biscuits by themselves would constitute a complete food, at least for adult dogs, but experience has shown us that excellent health is maintained when the above quantity of horse-flesh is added to the biscuits. It is also to be assumed that a proportion of the mutton greaves or "cracklings" is not digested by the dog, but at the same time it will serve a useful purpose by supplying bulk to the ration and to some extent take the place of the bones and more or less indigestible skin, some of which is, no doubt, consumed by the dog in its natural state. The albuminoid ratio of Dechambre's ration for the resting dog of 27 kilos is 1 to 6; that of this College, calculated from the chemical analysis, is 1 to 2·7 (the albuminoid ratio of bitch's milk is 1 to 2·2.

It is not suggested that either the ration of Dechambre or that in use here would be suitable for nursing bitches or growing pups. To make the diet complete, bones should be added and the best for this purpose are soft calf bones or the rib bones of lambs, which are easily masticated and digested. Rabbit, game, and poultry bones are to be avoided owing to their splintery nature and the frequency with which they cause serious intestinal lacerations. Though under more natural conditions, such as on farms, dogs possess the capacity to digest these splintery bones without apparently doing them any harm, house-dogs certainly have little power to do so. Some bulky food that is not so readily digested as flesh is an essential constituent of a maintenance ration for the dog, otherwise the excretion of waste products is delayed. Bones, furthermore, are very desirable in order to stiffen and harden the fæces and thus cause evacuation of the anal glands when the rectum is emptied.

In regard to the utilisation of *raw* flesh as part of the normal healthy dog's ration, this would not seem to be necessary. On the other hand, clinical experience has shown us that many cases of eczema in the dog are cured simply by making a complete change in the diet, withholding all carbonaceous food and giving raw flesh only. The potato above all foods seems to give the worst results, and in the opinion of many of us is responsible for a considerable amount of intestinal irritation and cutaneous lesions of an eczematous nature. Excessive feeding with porridge to house-dogs deprived of sufficient exercise also seems to be accountable for some of these troublesome conditions.

References.

1. The Nutrition of Farm Animals. H. P. Armsby. New York. 1917.
2. The Maintenance Requirements of Horses. R. G. Linton. Veterinary Journal, April, 1917.
3. Animal Nutrition. T. B. Wood. Cambridge, 1924.
4. Alimentation du chien par la methode des facteurs du rationnement. Recueil Med. Vet., xcv., Nos. 10 and 12, May and June, 1919, 220.

THE OXFORD OPHTHALMOLOGICAL CONGRESS.

THE fifteenth annual meeting of the Oxford Ophthalmological Congress took place in the Department of Human Anatomy, Keble College, on July 3rd, 4th, and 5th, and during the greater part of the session was presided over by the Master, Sir Anderson Critchett.

Dr. E. Landolt (Paris) initiated a discussion on the

General Principles of the Treatment of Convergent Concomitant Strabismus.

He said that strabismus meant a vicious relative direction of the two eyes. To secure normal sight the visual lines of the two eyes should be directed simultaneously upon the point which at the moment the person was interested in; the accomplishment of this meant the use of binocular vision. It demanded, therefore, that the image of the object being looked at be formed at the same moment on both foveæ. When binocular vision was not operative in an individual, the cause might be a central one, but in most cases it was due to visual impairment of one of the eyes. The absence of binocular vision was the chief cause of the occurrence of concomitant strabismus. In concomitant strabismus the visual lines crossed either beyond or within the point fixed by one of the eyes. In the former event the squint was divergent (relative or absolute), in the latter it was convergent. When binocular vision was not in operation other influences played a part in determining the relative direction of the two eyes. The first important influence was the direction of the eyes in a state of absolute rest, which was a divergent direction; hence a divergent squint was a passive squint. The second influence was an excessive stimulus to convergence, and therefore this was an active squint, and it might be produced by some special alteration of the nerve centres. It was mostly due, however, to the relationship between convergence and accommodation, an unusual effort to accommodate calling forth excessive convergence. As convergence depended only on the distance of the fixed point, it was the same for all eyes; but accommodation depended also upon the refraction of the eyes. Eyes whose refraction was defective, especially those which were hypermetropic, had to provide a greater amount of accommodation than of convergence, and when binocular vision was not operative the convergence followed the impulse of the accommodation. One eye saw the object distinctly, and the excess of convergence was manifest only in the other eye.

With regard to treatment, the first aim should be to restore binocular vision. This could be done by correcting the optical errors, and particularly the errors of the deviating eye, and in the second place, by isolated visual exercises of this eye and orthoptic exercises of both eyes. Convergent squint required that the spasm of accommodation should be subdued, by such means as the use of mydriatics, the wearing of convex glasses, and giving the eyes rest. If orthoptic treatment failed, surgery would cure the squint—i.e., advancement of the external recti with resection of the extremity of the muscles. He did not advocate surgery to replace the other means, but to complete them.

Dr. E. Thomson devoted his contribution mainly to setting out the measures to be taken for the prevention of the development of the squint. After strabismus had commenced optical correction should be carried out at the earliest possible moment. He eminded members of the cadaveric position of the eyes, their physiological position, and compared these with the position taken up by them in strabismus. He also discussed amblyopia in relation to squint and its incidence and course in children.

The Master, in expressing his high appreciation of both contributions, said he fully recognised the merits of advancement over the former method, of which latter his father was the originator.

Dr. De Schweinitz agreed in the main with Dr. Landolt's contentions. He gave some interesting details of his methods in his Philadelphia clinic.

Mr. T. Harrison Butler said that during the last 18 months he had made muscle recession combined with advancement his sole operation. The failures were of two kinds—failure to correct convergence, and failure to correct divergence. He was referring only to squints of 30° and more. One of the causes of failure after operation was that the powerful internal rectus was continually pulling against the sutures. By detaching the muscle and attaching it to the sclera 4 mm. back the operation was half done, and his results had been much better. He commented on the prevalence of squint among the children of the poor, in contrast with that in the children of the better classes.

Dr. Beatson Hird gave some experiences of his work as ophthalmic surgeon to the City of Birmingham Education Committee. He said the cases of squint

were all seen by him, carefully examined, and kept under periodic examination; 40 per cent. of the children referred to him in this capacity had squint. His aim was to cure refractive errors, and either prevent or cure amblyopia and straighten the optic axes. A printed leaflet of instructions to parents and guardians was distributed, and it had been a considerable help in the work. If the eyes could be got straight he believed many of the cases would fuse well of themselves. He did not hesitate to operate where it was required, and he considered that advancement was by far the best operation. In some cases, those which squinted from a very early age, he considered there was an anatomical peculiarity which accounted for it.

Mr. Ernest Clarke reiterated his views on the subject, calling special attention to the possible ætiology and the necessity of quite early treatment.

Mr. Claude Worth expressed his entire agreement with all the contentions Dr. Landolt had advanced, and gratefully acknowledged his teaching in regard to advancement. Gradually he had himself given up tenotomy. He had never seen the external ocular muscle abnormally strong, but it might be much weaker than usual. He regarded the amblyopia accompanying squint as the most important subject of all. It was in most cases acquired. The occlusion treatment was useless unless it was thorough; and there must be no possible avenue for sight by the side of the bandage, or the effort would be valueless.

Mr. Angus MacGillivray (Dundee) said his own idea of the origin of the amblyopia of squint was, that one eye had not been educated, and he believed that an infant's eyes were blind eyes. In the course of his duties in connexion with recruiting at the time of the war he found a preponderant proportion of blind eyes and squinting eyes among the denizens of towns, and only a small number among those engaged in agricultural occupations.

Dr. Stewart Barrie and Dr. Marion Gilchrist (Glasgow) also spoke.

The Doyne Memorial Lecture was delivered by Mr. Harrison Butler, who spoke on Focal Illumination of the Eye, with special reference to the clinical use of the Gullstrand slit-lamp.

At the Saturday morning session the subject for discussion was

Ophthalmology from a Legal Aspect.

Mr. H. H. Joy, K.C., opened the debate, pointing out the present position of ophthalmic industrial diseases under the Workmen's Compensation Act. He drew attention to a very instructive case in this connexion. An excellent workman with two eyes had an accident to one, the sight of which had been lost some time before. No one but himself had known that only one eye was of use. The accident drew attention to the fact that he was a one-eyed man. He recovered from the injury to the useless eye and was, physically and industrially, as good a man as before. But, from the point of view of the Act, his ability to earn wages—really meaning the opportunity to earn adequate wages—was materially lessened, and he was turned down because he was a one-eyed man. The House of Lords reversed all the decisions of the Courts below, and said he was entitled to compensation because it was in consequence of the accident that he could not thereafter earn wages. Mr. Joy went in detail into the legal aspect of many points in the Act, and discussed the question from the same standpoint as to whether one attack of miner's nystagmus predisposed to a further attack, and whether, therefore, one attack lowered the man's industrial value. A number of opinions quoted showed an inclination to accept that view.

The questions raised were discussed by Mr. Harrison Butler, Dr. C. Harford, Dr. A. Greene, Mr. Bernard Cridland, Col. A. H. Tubby, Mr. R. Coulter, Dr. R. Jaques, Mr. G. H. Pooley, Dr. Park Lewis, Dr. A. S. Percival, Mr. MacGillivray, and Mr. T. L. Llewellyn.

Demonstrations.

During the meetings an adjoining room contained a very full museum of exhibits, and on Friday a number of demonstrations were given. Dr. George Young discussed recent observations on double sclerectomy by trephining without communication with the anterior chamber. Dr. Rayner D. Batten showed: (1) Ophthalmoscopic drawings with the epidiascope illustrating the value of collective drawings shown in cardio-vascular diseases, macular diseases, cerebro-macular disease, congenital diseases, and various unclassified diseases; (2) models of fundus conditions; (3) the hydrophthalmoscope; (4) orbital rigid spectacles with ptosis props; (5) fixation fork for the insertion of sutures in advancements; (6) tension experiments with balloons. Dr. Thomson Henderson showed: (1) sections illustrating various pathological conditions; (2) sections illustrating evolution of ciliary muscle in mammalia.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Medical Register and the Irish Free State.

THERE has been, as far as is known, no development in the situation as regards the Medical Register and the Irish Free State. Some weeks ago the Minister for Local Government heard a full statement from a deputation representing the several licensing bodies, and it was hoped that the Irish Government might without delay move in the direction suggested by Sir Donald MacAlister. Delay in the matter is dangerous. At any moment the Register may be closed to Irish diplomates, and it is much easier to continue an existing system than to arrange a new one. Moreover, to continue the old system temporarily commits neither country as to the future.

National Health Insurance Bill in Ireland.

When the State Government Grant to meet the expenses of medical certification for National Health Insurance purposes was stopped last year, it was necessary for the National Health Insurance Commission to apply funds from various sources towards the expenses of certification. For this purpose legislation was necessary, and the Bill effecting it has now passed through the Dail without much opposition. The present arrangement is purely temporary, and has only been accepted by the medical profession up to August 31st next.

The Medico-Psychological Association.

The Medico-Psychological Association of Great Britain and Ireland held its eighty-third annual meeting at Belfast, July 1st to 5th. About 60 members were present, all parts of the country being well represented. The Government Lunacy Department were represented by Dr. C. H. Bond (England), Sir Arthur Rose, D.S.O., and Dr. H. C. Marr (Scotland), Dr. D. L. Kelly (Irish Free State), Colonel W. R. Dawson and Dr. N. C. Patrick (Northern Ireland). Dr. E. Goodall, the President, took the chair at the preliminary meeting in the Queen's University, at which Sir Frederick Mott was chosen president-elect for the year 1925-26. The following were elected Hon. Members of the Association: Lord Sandhurst, Prof. McDougall (Harvard University), and Colonel Dawson (Chief Medical Officer, Ministry of Home Affairs, Northern Ireland). The following were elected Corresponding Members: Dr. H. Cotton (New Jersey State Hospital) and Prof. Winckler (Utrecht University). Dr. Shaw Bolton was nominated Maudsley Lecturer for 1925. Dr. F. R. Martin read a paper on the Reaction of the Blood to the Ingestion of Protein in the Psychoses, and Dr. Thomas Houston gave a demonstration on the Examination of the Spinal Fluid.

In the afternoon a civic reception to the Association was given in the City Hall by the Lord Mayor of Belfast, Sir W. G. Turner, and this was followed by a luncheon. On reassembling at the Queen's University, a vote of thanks was passed to the officers and council of the Association, and the incoming President, Dr. M. J. Nolan, took the chair. In his inaugural address he dealt with the various schools of thought in psychological medicine, all of which had their contribution to make to practice. These were, he said, elements of truth and value in the different schools; the individual must be studied, and clinical experience must be the chief guide. He emphasised the importance of preventive measures and of early treatment in mental disorders. At the conclusion of the President's address the members inspected the Purdysburn Villa Colony (Belfast Mental Hospital). In the evening a reception was held in the Queen's University, when the guests were received by the Vice-Chancellor, Mr. R. W. Livingstone, M.A., and Mrs. Livingstone.

On Thursday morning, July 3rd, a paper was read by Sir Frederick Mott on the Thyroid Gland in Bodily and Mental Diseases. The comparative iodine content was estimated in 100 thyroid glands obtained from patients dying in general hospitals, in hospitals for consumption, and in asylums. There were no histological changes which could be associated with any particular form of mental disease, nor could one predict the iodine content in these cases. In cases of sudden death, or rapid death from disease, the iodine content was high. It was low on the average in tuberculosis and in chronic dysentery. It was lower than the average in the psychoses and in general paralysis. As nearly all the mental cases died from some chronic bodily disease it was difficult to dissociate the effects of this morbid condition from the effect which the mental state may have had. Attention was called to the thyroid gland being one of the important defences of the body against disease caused by chronic infections using up the thyro-iodine and thus impairing the oxidation processes required for metabolism. Chronic infections might excite or prolong mental disorder in a potentially unstable brain. A paper on Encephalitis Lethargica was then read by Dr. R. Marshall (Belfast), in which the experience gained in Belfast in the last two epidemics was summed up.

The members were entertained to luncheon by the invitation of the Ministry of Home Affairs, Northern Ireland, and in the afternoon an address was given by Dr. Chalmers Watson on Further Reflections on the Rôle of Auto-infection in the Ætiology of Acute and Chronic Mental Disorders. In the evening the annual dinner was held in the Grand Hall of the University, at which about 90 members and guests were present.

On Friday, July 4th, a visit was paid to the County Down Asylum at Downpatrick. Prof. G. M. Robertson read a paper on Is Dementia Præcox a Clinical Entity? in which he discussed the views of Kraepelin and others, but refrained from any dogmatic conclusion. Colonel Dawson read a paper on the Belfast War Hospital and its Work, 1917-19. The asylum was subsequently inspected. After return to town a lecture was given by Prof. T. Walmsley on the Psychology of Primitive Man.

Saturday, July 5th, was devoted to an excursion to the Mourne Mountain District, co. Down.

Report of Inspector of Lunatics, Northern Ireland.

The first report of the Inspector of Lunatics, Northern Ireland, recently published,[1] but covering the years 1921-22, contains the usual statistics and brief records of the state of the asylums in question. There are 4277 insane in six institutions, of which Belfast and Down have up-to-date and well-equipped buildings, whereas the remainder suffer certain structural and other disadvantages. At Armagh there is overcrowding, and adverse comment is made on the dietary, some of the furniture, and the absence of an observation ward. Antrim is also somewhat overfull; the building is in good order, but no regular training is afforded to the attendants and nurses. Londonderry suffers from the antiquated and unsatisfactory nature of the old buildings, and needs an additional medical officer. At Omagh a new water-supply is being sought. There are no references in this report to the general health of the patients in these asylums, or the incidence of such diseases as dysentery, typhoid, and tuberculosis. The conditions here disclosed are characterised by a considerable degree of order, efficiency, and comfort for the patients. The price of this report, consisting of 47 pages only, is 7*s*.

[1] H.M. Stationery Office, 15, Donegall-square W., Belfast. 7*s*.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

The Annual Session of the American Medical Association.

THE seventy-fifth session was held this year in Chicago from June 10th to 13th. There was a record attendance, and the meeting was generally considered to have been a very successful one. The famous Municipal Pier, a huge structure which stretches for nearly a mile into Lake Michigan, provided ample accommodation for the activities of the Association. At the shore end were the offices for registration, information bureau, &c., and beyond this nearly a quarter of a mile devoted to scientific and commercial exhibits from various schools and firms. Beyond this again were large spaces divided off for sectional meetings. On June 9th and 10th diagnostic clinics were held by well-known medical men from all over the country. On the evening of June 10th the opening meeting was held, Dr. Ray Lyman Wilbur, of Stanford University, California, last year's President, being in the chair. The new President, Dr. William A. Pusey, of Chicago, delivered his address on "Some of the Social Problems of Medicine." Dr. Pusey spoke of the tendency of the modern world towards socialisation, and said that the medical profession must form part of the intellectual minority which will check the excesses of this tendency and guide it in the direction of moderation and wisdom. Amongst the distinguished foreign guests present at the Association meeting were: Miss Louisa Martindale, of London; Dr. Leonard Findlay, of Glasgow; Dr. Wills Maclachlan, of Toronto; Prof. Finkelstein, of Berlin; Prof. Petrén, of Lund, Sweden; and Prof. Sendjiak, of Warsaw, Poland. The sectional discussions were too various to enumerate. Among the many interesting addresses was one with demonstrations by Dr. George Dick, of Chicago, on his test for scarlet fever immunity. A feature was a motion-picture theatre at which many topical demonstrations were given.

Of the many ingenious novelties shown at the exhibition perhaps the most remarkable was one by C. T. Gamble, Philadelphia, and Richard Cabot, Boston. This was an electric amplifier stethoscope provided with electrical filters by means of which many scores of people could listen at one time to the same heart or chest, the sounds of which could be amplified more or less as desired. Phonographic records of heart sounds were also exhibited. This device seems to offer great possibilities in the teaching of auscultation, aside from its value as a diagnostic aid.

On the evening of Monday, June 9th, a complimentary dinner was given to Dr. G. H. Simmons on his twenty-fifth anniversary as Editor of the *Journal of the American Medical Association*. Dr. Harvey Cushing was in the chair, and the others who spoke in appreciation of Dr. Simmons's work were: Dr. Frank Billings, Dr. William Mayo, Dr. William D. Jones, Dr. Hubert Work, and Dr. William S. Thayer, the last of whom made the presentation of a portrait by Arvid Nyholm.

The Work of the A.M.A.—Chicago is the home of the Association. "From a corner in the office of Dr. N. S. Davis, of Chicago, to a six-story plant occupying 100 by 160 feet, and providing ample accommodations for at least the present needs; from a yearly volume of transactions to a weekly publication averaging 144 pages, and a circulation of more than 80,000, with journals for seven medical specialties of importance, a lay journal, and bureaus for all the interests of the physicians—this, in a brief statement, has been the progress of the American Medical Association." Thus runs the first sentence in a booklet published by the Association, describing its work. The organisation represents 90,000 of the 145,000 physicians of the country, and almost 60,000 of them, as Fellows of the Association, take an active interest in its work. The publications edited and printed by the American Medical Association include the *Journal of the American Medical Association*, its Spanish edition, the *American Journal of Diseases of Children*, the *Archives of Internal Medicine*, the *Archives of Surgery*, the *Archives of Neurology and Psychiatry*, the *Archives of Dermatology and Syphilology*, the American Medical Association *Bulletin* and *Hygeia*. The latter is published under the auspices of the Bureau of Health and Public Instruction, the function of which is "to promote in various ways the education of the public along health and medical lines."

One of the most interesting of the departments is that of the Bureau of Investigation directed by Dr. Arthur J. Cramp, which conducts an unceasing campaign against quackery of all sorts. Information of every description, advertisements, pamphlets, &c., used by patent-medicine makers is gathered and filed. Small pamphlets written for the laity are published under therapeutic groups such as "cancer cures," "deafness cures," and "female weakness cures." Any layman making inquiry concerning some quack medicine is furnished with the appropriate pamphlet. "Nostrums and Quackery" is an interesting two-volume compilation of facts about a vast number of patent medicines, and loose-leaf pages of it are sent out to laymen and physicians in answer to letters of inquiry. Many newspapers and magazine editors consult the department concerning the genuineness of solicited advertisements. The information is obtained by original investigations made by the department supplemented by data received from any reputable source outside, including foreign sources such as the report of the Select Committee on Patent Medicines of Great Britain, and the Royal Commission on Secret Drugs, Cures, and Foods of Australia. The whole organisation is a good example of successful centralisation.

Mental Disorder in Immigrants.

A question of greater importance in the United States than elsewhere, but none the less of general interest, is ventilated in a recent issue (Vol. xxxix., No. 17) of the *Public Health Reports of the United States Government*, by Miss M. C. Jarrett. It has been asserted that difficulty of adaptation to new surroundings is a cause of mental disorder in immigrants. From a study of 240 boys of foreign parentage, Miss Jarrett can find no grounds for the belief that the complexity and unfamiliarity of American customs and institutions often cause immigrants to become mentally unbalanced or harassed to the point of committing anti-social acts. The influence of social factors peculiar to immigrants could not be identified as responsible for delinquency or other mental abnormality in any of these cases. The findings are negative, bearing in no way on the general question of mental health in the United States, which is at present receiving much attention. The amount of painstaking social work being carried on may be gathered from the fact that each of the families of some of these cases had been cared for by no less than seven, eight, and in one case 15, different "social agencies."

Public Health Services.

THE HEALTH OF LONDON IN 1923.

Sir William Hamer, medical officer of health and school medical officer to the London County Council, reports that the year 1923 was remarkable for the lowest death-rate and lowest infant mortality-rate ever recorded in London. The Registrar-General estimates the civil population at 4,564,109, and the non-civilian at 6000. The birth-rate was 20·1, the death-rate 11·4, and the infant mortality-rate 61. The death-rates from tuberculosis and cancer were 1·2 and 1·4 respectively. Sir William Hamer discusses the London life-tables since 1841, and shows that in the course of 80 years the Londoner's expectation of life has been extended from 34·6 years to 53·8 years for males, and from 38·3 years to 59·1 years for females. The number of legitimate children born per hundred married women of ages 15 to 45 years has decreased by 29·7 per cent. during this period, and only about 3·2 per cent. of this change is due to the altered age constitution of the married women of child-bearing age.

The year 1923 marks another successful period in dealing with the prevention of *small-pox* in London, only 11 cases with one death having occurred during the year. The wonderful success of this branch of the public health administration is attributed to the close coöperation of the Ministry of Health, the County Council, the Metropolitan Asylums Board, the City Corporation, the Port Authority, the borough councils, and the boards of guardians and sanitary authorities in the area of Greater London. Examples are given of the care taken to search out contacts who may have been infected, and one illustrative case is given of a patient who went about as usual for 24 days after she became infectious before the nature of her case was recognised. The valuable assistance of the Council's experts in diagnosis, Dr. W. McC. Wanklyn and Dr. J. A. H. Brincker, receives due recognition. The notifications of tuberculosis during 1923 were slightly more than twice the deaths in number.

Sir William Hamer discusses the views expressed by Dr. Dublin, the statistician of the Metropolitan Life Insurance Company of New York, as to the influence of *environment* and *heredity* respectively. Dr. Dublin thinks that on the score of geographical variation, the environmentalists have the better of the argument. The sex and age variations also favour the environmentalists, as there is no evidence of a differential heredity endowment among brothers and sisters. Tuberculosis is said to be less fatal among Jews and Italians, but the rates among Jews and Italians respectively vary according to their environment. For an explanation of variation according to economic levels, the eugenists have to rest their case on the superior endowments and vigour of the groups who make up the well-to-do classes of the community as distinguished from the poor. As regards the effect of occupation, the eugenists would need to hold that the persons engaged in various occupations are selected in accordance with their inherited ability to withstand tuberculosis. Finally, Dr. Dublin states that the eugenists lose no opportunity of saying that there has been no improvement in the racial constitution of the people of the U.S.A., but rather a deterioration, and in spite of this the tuberculosis death-rate has fallen by 50 per cent. during the last 20 years. There is good evidence that the population of America is better off. Never before in the history of the country has so favourable a change come over the environment of the people as in the years subsequent to the late war. Sir William Hamer appears to favour his final conclusion that the environmentalists have the best of the argument all through.

The report deals at length with the behaviour of *influenza*, together with the group of diseases which Sir William Hamer associates with it—namely, cerebro-spinal fever, poliomyelitis, and polio-encephalitis and encephalitis lethargica. He suggests that

influenza is primarily a disease of the cerebro-spinal nervous system, and that this in part accounts for its protean manifestations, another reason being the lesser stability of the *materies morbi* as compared with organisms like the tubercle bacillus. Major waves of influenza develop about every 15 or 20 years as great pandemic prevalences, and preceding and following each pandemic at intervals of some one, two, or three years come the trailer epidemics. While pandemic influenza especially attacks persons of young adult or adult age, the trailer outbreaks seem to affect rather the young children or old persons who have escaped attack during the pandemic. Sir William Hamer endeavours to account for the disparity between the simple measles curve and the complex influenza curve.

The theory that much of the *typhoid fever* in London has been due to the consumption of immature plaice from the area including the mouth of the Elbe is further discussed, and, in fact, extended to other parts of England, as Sir William Hamer shows that the Humber ports were at one time the source of supply of this class of fish.

The *death-rate from cancer* in London is shown to be slightly higher than that for England and Wales as a whole. During the last 70 years the mortality among males has increased five-fold, while that among females less than two and a half times. The ratio of the male to the female rate, which in 1850–52 was 100 to 195, is now 100 to 83.

During the spring of 1923 publicity was given to a *skin disease caused by wearing furs*. A sample of one of the furs indicated was examined in the Council's laboratory. The furs in question are known as "coney-beaver," and the varieties mainly indicated were those of the lighter shades. The chemical substance which poisons the skin disappears in course of time by volatilisation. The Ministry of Health conferred with the London Fur Traders Association with regard to the matter, and it is assumed that the measures taken to prevent an occurrence of the mischief have been effective.

In discussing the *venereal diseases schemes*, Sir William Hamer shows that the ratio of attendances to venereal cases is 29 to each new case, a higher ratio than obtains even in those countries where venereal diseases are compulsorily notifiable. The records show that medical practitioners made more use of the facilities for pathological examinations in 1923 than ever before. Sir William Hamer states that most of the suggestions contained in the report of the Trevethin committee have already been embodied in the Council's scheme.

During 1923 Dr. N. D. Bardswell investigated the *after-histories of adult tuberculous persons* in the County of London who received institutional treatment during the year 1918, and his inquiry confirms the usefulness of the sanatorium in the treatment of tuberculosis in its initial stages and its ineffectiveness when the disease is well established. The question is asked: What more can be done to improve the prospects of the moderately advanced case and is a mortality of some 70 per cent. within four years to be accepted as inevitable? The chances of the civilian and the ex-Service man are compared. The ex-Service man has no limit put to his institutional treatment; it may be repeated and prolonged. He is free from financial worries and anxieties about dependents. He has a well-endowed scheme of after-care. One is not surprised to learn, therefore, from the table given that the results of treating ex-Service men are materially better than those of treating comparable cases among the rest of the population.

The death-rate from *puerperal sepsis* per 1000 births was 1·4, about the same as that for England and Wales during the two previous years. The death-rate for other child-birth causes is not given. Nine hundred and five midwives gave notice of their intention to practise within the county, an increase of 76 on last year's figures. Their work is supervised by four women medical inspectors. Midwives attended about 42,000 confinements and sent for medical aid in 17 per cent. of the cases. The births attended by the midwives numbered 45 per cent. of the total births. They were debited with about 30 per cent. of the fatal cases of puerperal fever, and about 60 per cent. of the notified cases of *ophthalmia neonatorum*. Of the 753 cases of this latter disease, 449 occurred in the practice of midwives, of which 420 cases made a complete recovery and there were 12 deaths. The damage done to survivors was as follows: one case of blindness in both eyes, one case of blindness of one eye, two cases of impairment of vision in both, and one of impairment in one eye. In 11 instances the result was not ascertained owing to removal. In addition, two unnotified cases were investigated, one resulting in total blindness and the other in the loss of sight of one eye. Sixty-four cases received in-patient hospital treatment at St. Margaret's Hospital. No information is given as to the damage done to eyesight in the 304 notified cases which did not occur in the practice of midwives. It seems to be of the highest importance on every ground that we should know the complete story from every district in the county with respect to this tragedy of child life.

MENTAL HOSPITALS SERVICE.

Scottish Western Asylums Research Institute.

THE fourteenth annual report of this institute illustrates the results which may be obtained when a group of institutions combine to have their pathological work carried out by a single efficient laboratory,—an arrangement of which there appears to be only one example in England. This example might well be followed by other mental hospitals in which the establishment of individual laboratories is impracticable. Some 2500 investigations have been carried out during the year. Research has been somewhat interrupted by the immense volume of tedious work involved in detecting a number of intermittent typhoid carriers. Dr. W. Whitelaw, the director, discusses the problem of dealing with these carriers after their detection; there is no infallible means of eradicating the infection from these patients, and he very reasonably suggests that all of them throughout Scotland should be gathered together in one institution. "Administration would be easier; isolation would be more efficient; the isolation would be less burdensome to the patients." Among the subjects of original work pursued during the year have been blood-sugar variations in emotional states, calcium metabolism, and the *Bacillus acidophilus* milk treatment. In discussing the treatment of general paralysis, Dr. Whitelaw suggests that if recent methods are to be tested adequately each will have to be applied on as large a scale as possible (as by confining the treatment of this disease in each of several institutions to a single specific method), and the results of this large-scale adoption compared.

Glasgow Royal Asylum.

Several new developments are recorded or foreshadowed in the annual report for 1923. The hospital now has a complete consulting staff of eight members in addition to the resident staff of four medical officers for about 500 patients—five names occur in the list of officers, but both the late second assistant medical officer and his successor are included. Miss Dorothea Robertson has been appointed as "occupational teacher." An "occupational pavilion" has been built, and the results attained already by the systematic teaching of handicrafts to patients who previously "sat listless about the wards" are stated to be excellent. Several recoveries are attributed to the treatment; the wards are quieter, and the general life of the hospital has greatly benefited. The medical superintendent, Dr. D. K. Henderson, discusses at some length the difficulty of finding suitable candidates for the nursing staff. In appealing for "a well-educated, intelligent, and refined type of girl," he points out the advantages of a mental hospital career and the real interest of the work. A new nurses' home is to be built, and it is hoped that its amenities will offer a further inducement to the entry of nurses.

Cumberland and Westmorland Mental Hospital.

In the annual report for 1923 it is recorded that a dental surgeon has been appointed, a step previously recommended by the visiting Commissioners on several occasions. A low recovery-rate, and the small proportion of patients usefully employed, are explained by the admission of many senile and other hopeless cases. "The character of the majority of cases admitted during the last few years shows a marked deterioration." The Commissioner's report suggests extending the practice of giving money allowances to patients on trial, and granting leave on trial to larger numbers. Dr. W. F. Farquharson, the medical superintendent, observes that changes in the female nursing and domestic staff continue to be unduly numerous.

City of Leicester Mental Hospital.

An increase in the number of female patients, and in the ratio of the insane to the general population of Leicester, is recorded in the annual report for 1923. There are now 542 patients, and the hospital is staffed by three medical officers. A visiting dentist has recently been appointed, and appears to have carried out a large amount of work, and an X ray apparatus has been installed. This hospital has three classes of parole—42 patients are allowed outside the hospital unattended, 117 in the grounds, and 147 are allowed to move about the wards and in the ward gardens. In addition 78 are allowed to visit their homes for week-ends. This appears to be a remarkable example of what can be done in allowing freedom to patients when close attention is paid to the possibilities and limitations of each individual case. Dr. J. F. Dixon notes that four escapes (so-called) occurred during the year, all of cases on parole or limited parole, who may more correctly be said to have absented themselves without leave.

Middlesbrough Borough Mental Hospital.

The visiting Commissioner's observations, reprinted in the annual report for 1923, suggest the provision of a more ample stock of clothing and tooth-brushes, greater variety in the diet, and the appointment of a dentist. Outside parole has been allowed to 15 patients, and it is suggested that open doors and limited parole in the grounds might be of similar benefit to a larger number. The hospital contains about 430 patients, and is staffed by two medical officers. The medical superintendent, Dr. J. W. Geddes, states that 58 per cent. of the patients were kept usefully employed, and that the recovery-rate was 41·7 per cent. on the direct admissions.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JULY 5TH, 1924.

Notifications.—The following cases of infectious disease were notified during the week, namely:—Small-pox, 62; scarlet fever, 1267; diphtheria, 619 (as against 692 of the previous week); enteric fever, 138 (as against 181 of the previous week); pneumonia, 657; puerperal fever, 36; cerebro-spinal fever, 10; acute poliomyelitis, 12; encephalitis lethargica, 103 (as against 132 of the previous week); continued fever, 1; dysentery, 6; ophthalmia neonatorum, 132. There were no cases of cholera, plague, acute polio-encephalitis, or typhus fever notified during the week. Of the 62 cases of small-pox, 1 was notified from the County of London (Kensington); 20 from the county of Derby (Derby 7, Chesterfield 11, Chesterfield R.D. 1); 1 from the county of Middlesex (Willesden); 7 from Northumberland (Ashington); 13 from the county of Nottingham (Hucknall 7, Kirkby in Ashfield 3); 4 from the county of Warwick (Coventry); 5 from Yorks, North Riding (Middlesbrough); 6 from Yorks, West Riding (Rotherham 5). Of the cases of encephalitis lethargica, 14 were notified from the County of London (Bermondsey 2, Camberwell 2, Fulham 1, Kensington 1, Paddington 1, St. Marylebone 1, St. Pancras 2, Southwark 1, Stepney 1, Wandsworth 1); 5 from the county of Durham (Sunderland 2); 5 from Bristol; 18 from the county of Lancaster (Liverpool 3, Manchester 8); 3 from Northumberland (Newcastle 2); 4 from the county of Stafford (Burton-upon-Trent 2); 8 from the county of Warwick (Birmingham 5); and 14 from Yorks, West Riding (Sheffield 7).

Deaths.—In the aggregate of great towns, the deaths from influenza fell from 30 (of the previous week) to 21, while deaths from measles fell from 57 (of the previous week) to 36.

Obituary.

SIR SYDNEY RUSSELL-WELLS, M.D., B.Sc., F.R.C.P. LOND., M.P.

WE greatly regret to announce the death on July 14th of Sir Sydney Russell-Wells, Member of Parliament since 1922 for the University of London. Death came with tragic suddenness, for he had been engaged an hour before in his professional duties.

Sydney Russell-Wells was born in London on Sept. 25th, 1869, the son of Benjamin Weston Wells. He was educated privately, his bent for science being early apparent and his first serious study being devoted to chemistry at the Royal College of Science; in 1889 he took his B.Sc. degree at London University from University College, becoming about the same time a Fellow of the Chemical Society. Turning to medicine, Russell-Wells then entered St. George's Hospital, obtaining in succession the Pollock, Treasurer's, and Brackenbury prizes, as well as the coveted William Brown exhibition of £100 tenable for two years. After qualifying M.B. Lond. in 1893, with honours in two subjects, he took a series of house appointments at St. George's, becoming medical registrar, and would no doubt have taken a position there on the honorary staff had not his educational interests already broadened to include much outside the range of clinical medicine. As it was, he became physician to the Seamen's Hospital at Greenwich and to the National Hospital for Diseases of the Heart, Westmoreland-street, as well as lecturer in the London School of Clinical Medicine. In all these capacities his love of detail and lavish expenditure of time were put freely at the use of the post-graduate students from all parts of the world who attended his demonstrations; his clinical directions to patients were those of the practical man and chemist, and many learned to appreciate the adviser who bade them shun the butcher and cherish the baker and greengrocer. His cardiac work included study with Leonard Hill of the influence of resilience of the arterial wall on blood pressure and an elaborate investigation into the cardiac efficiency of 10,000 recruits with alleged circulatory disturbances. A remarkably complete account of a case of intermittent complete heart-block appeared in our columns two years ago.

In the University of London Russell-Wells's interest was lifelong: the University was his hobby, his constant pre-occupation. He stood always as the champion of the external student, and although he came to realise that the degree of medicine differed from that in other faculties mainly because the course of education as well as the examinational results had to be standardised, he was always opposed to any narrow collegiate conception of University life. He saw the need of a faculty of commerce within the University, and having seen it spent years in working out the course of training and wearing down the difficulties urged against it. For long years a senator, with maximal attendances always recorded against his name, Russell-Wells finally obtained the desire of his heart, and from 1919–22, four critical years in its history, presided over the destinies of the University as its Vice-Chancellor. He represented the University on the General Medical Council and on the retirement of Sir Philip Magnus in 1922 succeeded him as representative in the House of Commons. In the House his voice was not often heard apart from his useful contributions in committee to academic and University affairs, but he was pledged to obtain, if possible, substantial modifications in the panel system, and he was strenuously opposed to any attempt to place the insurance medical service under the domination of the approved societies.

Sir Sydney Russell-Wells's services to education were recognised in 1921 by the conferment of a knighthood. He married in 1895 Harriett, third daughter of the late Stephen Smith, who, with one son and two daughters, survives him. Our sympathy goes out to them in their sudden bereavement.

Correspondence.

"Audi alteram partem."

MEDICAL EDUCATION: PROPOSED CHANGES.

To the Editor of THE LANCET.

SIR,—A very important movement in connexion with medical education is at present under the consideration of the Senate of the University of London, which, as it must affect clinical as well as intermediate teaching, should not be allowed to pass without the opinions of the teachers of the final subjects being ascertained.

The movement began, we believe, by University College asking to be allowed to hold a special intermediate examination in anatomy, physiology, organic chemistry, and pharmacology for its own students. Apparently the greater number of London teachers in the latter three subjects favour this course, on condition that each teacher shall hold an independent examination, supervised by an external examiner, at his own school, but that there shall be a common paper set by all the teachers as well as by the external examiner or examiners. Doubtless the ideal which these teachers have in their minds is that they will have greater freedom to develop their teaching on their own lines, and will not necessarily be forced to cover the whole range of their subjects with equal care.

The greater number of the teachers of anatomy, on the other hand, while they sympathise with their colleagues' ideals and are willing to support them as far as physiology, organic chemistry, and pharmacology are concerned, have grave doubts whether the system can be applied to anatomy as taught to medical students. Every one of them would prefer, in his own interest, to teach those parts of anatomy which appeal to him most, and, of course, if he did so the examination must be so arranged that his students did not suffer for their lack of knowledge in those parts which he regarded as of secondary importance. They are doubtful, however, if this method, even with a common paper, would best prepare the medical student for his later clinical teaching.

The close association of the surgical and anatomical teachers, which is so much valued by the latter, impresses on them the necessity of giving an even, practical knowledge of the whole human body to their students, as far as the limited time at their disposal allows. A surgeon never knows what anatomical knowledge may not be useful to him, and the same thing may be said, though perhaps in a lesser degree, of the physician and the specialist. It is for this reason that they hope that the question may be regarded as one of sufficient importance to be considered carefully by the Advanced Medical Board, or, better still, by the whole Faculty of Medicine, and that the Senate will not make any sweeping alterations in our methods of teaching and examining in anatomy until the opinion of the whole faculty has been obtained.

The ideals of University College are those which the American universities have already attained. The ideal position of a professor who is free to devote himself to research in his own particular branch and can teach the things which interest him most can be fully appreciated. Has this method, as far as the average student is concerned, produced the best results from a clinical point of view? This is the point upon which our clinical colleagues, who have worked with American physicians and surgeons during the war, can give an opinion. Personally, we hold the London M.B. qualification in great respect and regard it as one of the best triple qualifications in the world. We are quite prepared to advance along the path of progress should we be convinced that a change in our methods is in the best interests of medical education.

We are, Sir, yours faithfully,

F. G. PARSONS,
J. ERNEST FRAZER,
E. BARCLAY-SMITH.

July 10th, 1924.

LEAD POISONING AND CANCER.

To the Editor of THE LANCET.

SIR,—It appears that my attempt—to which you referred in a leading article on June 7th—to secure assistance from statisticians and medical officers of health concerning a *possible* relationship between lead poisoning and immunity to cancer is unlikely to bear fruit in the immediate future for the following reasons:—

First, those who have already expressed their views in print—for example, Prof. E. L. Collis (THE LANCET, June 14th, p. 1239) and Mr. A. Feil (*La Presse Médicale*, June 28th, 1924, p. 1093)—have shown that they do not realise the difficulties of the subject from a statistical point of view. Both Prof. Collis and Mr. Feil take the comparative mortality figures of certain occupations in which lead poisoning may occur, and they assert that these show no evidence of any relationship, such as I have suggested may be possible.

I cannot here discuss all the relevant occupational statistics, so I shall refer only to those of one trade mentioned by them, and also discussed in my address (*Public Health*, June, 1924, p. 217)—namely, that of potters. How, I ask, is it possible to take the cancer mortality figures of all the members of this trade as indicative of the absence of the influence of lead on cancer, when only about 7 per cent. of the workers are exposed to the possibility of lead poisoning, and when to-day only a very small percentage of this 7 per cent. is poisoned with lead? In my address I stated that about 80 per cent. of potters are not exposed to the possibility of lead poisoning, but the more recent publication of Dr. F. Shufflebotham (THE LANCET, July 5th, p. 52) shows that the number is about 93 per cent.!

As I have stated, I do not think it is possible to use with statistical accuracy the present occupational comparative mortality-rates for the purpose I have in view. Nevertheless, to utilise them, as I did, to demonstrate a relationship between deaths from plumbism and deaths from cancer in the particular trades in which lead poisoning is most common, is justifiable as a preliminary procedure, provided the decennial increase is taken into account, and the age-periods between 25 and 65 years alone are considered. In regard to the last condition, it may be stated that the death-rate from cancer is greater after the age of 70 years in the ratio of more than 2 to 1—that is, after a majority of persons have ceased to work. In a table, which I repeat here, I show that in the only trade in which fatal lead poisoning increased during the decennial period considered the cancer death-rate decreased; and that in the two other trades a decrease in the number of deaths from plumbism was accompanied by an increase, above the normal, of deaths from cancer.

Comparative Mortality-rate per 100,000 Population at Ages 25–65 Years.

—		1900–1902.	1910–1912.	Percentage increase or decrease.
All males	Cancer	68	75	+15
	Plumbism	1	1	0
File makers	Cancer	57	78	+37
	Plumbism	56	10	−82
Lead manufactures	Cancer	81	80	− 1
	Plumbism	102	123	+21
Plumbers, painters, and glaziers	Cancer	73	87	+19
	Plumbism	23	20	−13

I do not assume statistical accuracy for these figures, but at least they are suggestive.

Secondly, the following conditions for statistical investigations must be observed: (*a*) Inevitability of lead poisoning; (*b*) existence of lead poisoning; (*c*) coexistence of one of these conditions with the

onset of cancer. The evidence of Mr. T. W. Stuart and Mr. F. A. Johnson, given in my address, seems to prove, as conclusively as personal statements can prove anything, that men who inevitably inhale lead during their work are immune to malignant disease.

Meanwhile, I take up no position in the matter other than that of an inquirer. I have put forward what seems to be suggestive, but not conclusive evidence. I now await the answer. It may be ten years before this can be given. Before that time has elapsed we shall probably have the answer to the whole question. We ourselves may be using some other preparation than lead, which at present is the best agent we can find for destruction of the chorionic epithelium, and, therefore, as we believe, of malignant cells.

I am, Sir, yours faithfully,

Liverpool, July 10th, 1924. W. BLAIR BELL.

EMETINE IN THE TREATMENT OF ALCOHOL AND MORPHINE HABITS.

To the Editor of THE LANCET.

SIR,—In "Hormone Therapy"[1] I advocated hypodermic injections of emetine hydrochloride for alcoholism, and considered it specific for the craving. At that time only 18 to 20 cases had been reported, but since then over 100 cases have been under treatment so that a fuller experience is now available. This added experience has been shared by others. In "Minor Maladies" Dr. Leonard Williams reports success with emetine hydrochloride, but is not prepared to admit its specificity. There are 3 per cent. to 5 per cent. of alcoholic cases who do not respond to the usual injection of one-third of a grain. It is found that by reducing the dose to one-sixth or one-ninth of a grain these patients begin to recover and to exhibit the same improvement as do normal cases with the full dose.

In the treatment of alcoholism the usual routine is to give an injection of one-third of a grain of emetine hydrochlor. every second day for three doses. In some cases it may be found advisable to give one every day for three doses. After the first three the interval between succeeding doses is lengthened by a day. Thus injections are usually given on days—1, 3, 5, 8, 12, 17, 23, 30. This usually constitutes a course, although an injection once a week may be given for some time afterwards if thought advisable. With the emetine injections I give the following mixture:—

℞ Sod. glycerophos... .. .. ℥ii.
Mist. pepsin co. c. bism. .. ℥iss.
Hormonax .. .. .. ℥vi.
Aq. menth. pip. ad .. .. ℥xii.
Sig. ℥ss. ex aq. four times a day.

The reason for the increasing interval between the injections is that emetine is cumulative in action. Alcohol is discontinued as soon as possible, for each dose of it weakens the action of the emetine. Four ounces of alcohol may be given for the first 24 hours and the amount reduced by an ounce each day. There may be some elasticity about this rule, but alcohol should be discontinued as early as possible.

The effect on the nervous system is very marked. A man very soon realises that he is getting a grip of himself and the improvement in his personal appearance corresponds. When a case has gone on to delirium tremens there is no better treatment than emetine. The result of each injection should be watched (they should be given daily for several days), and reduced in strength when the symptoms suggest the advisability of this. Also a suitable quantity of bromide may be added to the mixture.

When "Hormone Therapy" was published I had had no experience with emetine except in alcoholic cases, but I suggested its use in morphine and other drug addictions. In the *Medical Press* of Nov. 29th, 1922, Margaret Vivian reported good results in three cases of morphine habit treated with emetine. Since then I have had two cases, both very successful.

R. P., aged 61, medical practitioner, habit of ten years' duration, a debilitated, decrepit man for his years, weight under 100 lb. Was taking 5 to 6 gr. a day. Had tried many treatments without success. Result was that all morphine was discontinued in 14 days, and three weeks later when he was told that he had not had any for three weeks he could scarcely believe it. He had not known when the drug had been withdrawn.

I. A., aged 50, medical practitioner, a very long-standing case of drug addiction. A heavy lethargic man who was taking various amounts up to and over 20 gr. a day. The drug in his case was wholly discontinued in 12 days, and a fortnight later he was told that he had had none all that time. He had not known when morphine had been discontinued.

The change in the general condition of both men was very marked. The first recovered vigour and put on 20 lb. weight, while the second lost his besotted appearance and appeared perfectly normal. The treatment in both was exactly as for alcohol. In each case it was resolved to begin with three grains a day. Two bottles were prepared: (*a*) A four-ounce mixture containing *half a grain* of morphine hydrochloride *in every 20 minims*, and (*b*) an eight-ounce mixture with sufficient quin. sulphat. in it to simulate the taste of (*a*). Six doses of 20 minims each were given every day from (*a*) and the bottle filled up from (*b*). At the end of 12 to 14 days there was so little morphine left in (*a*) that it was put aside and (*b*) alone was used for the remainder of the time.

Some cases may succeed without being put under control, but for uniform results the alcoholic cases should be detained for at least a fortnight and the morphine cases for not less than four weeks. The habits of years are not easily eradicated even although the craving may have disappeared. In such cases, both with alcohol and morphine, there are many who once restored never relapse, but many of the periodical type return for treatment from time to time. The treatment is just as successful in recurrences. Many learn to come at the very onset, and a few injections prevent the usual results.

Shortly, we have in emetine a treatment which destroys the craving for alcohol and morphine, which builds up the patient's whole nervous system, and thus materially aids in the treatment of such drug habits.

I am, Sir, yours faithfully,

D. MONTGOMERIE PATON, L.R.C.P. & S. Edin.

Heidelberg, Victoria, April 11th, 1924.

[1] Baillière, Tindall and Cox. 1922.

CANCER: HOW IT IS CAUSED, HOW IT CAN BE PREVENTED.

To the Editor of THE LANCET.

SIR,—In your issue of to-day you print a very brief review of my book on cancer. The reviewer states that my explanation of the causation of cancer is "not new," that I am "very ill-informed on the subject," and he accuses me twice of producing "statistical fallacies." I suppose I must have produced an absolutely rotten book.

Curiously enough, your reviewer's condemnation stands alone. I have received so far approximately 30 reviews of a column or more, printed in the *Times* and other leading papers, and practically unanimously the writers give to my volume the highest praise which can be given to it. It has been a marvellous reception, and the 30 odd eulogies were apparently all written by eminent medical men, some of whom appended their signatures. I would also draw your attention to the fact that Sir Arbuthnot Lane has stated in his introduction the opinion that my book might be considered "easily the most important practical work on cancer existing in English or in any other language." In addition to these printed testimonies, I have received private letters full of praise and of fervent good wishes from a great many leading medical men, and among these letters are two signed by great specialists on cancer.

I have no objection to severe criticism. On the contrary, I like it. It is beneficial to a writer. But I think that your reviewer is hardly entitled to condemn my volume wholesale and accuse me repeatedly of producing "statistical fallacies," a polite way of saying something grossly impolite. I would, therefore, ask your reviewer either to substantiate his accusation or to withdraw it. He owes an explanation rather to your readers than to me, and I trust that in the interests of fair play you will print my letter and give your reviewer space for a reply.

I am, Sir, yours very truly,

July 12th, 1924. J. ELLIS BARKER.

*** Cancer is a disease which has no specific symptoms and no obvious signs, except when a tumour happens to be on the surface of the body. It can be diagnosed with certainty only by microscopic examination either after operation or after death. It increases rapidly with increasing age, and rarely affects young people. In order to make a statistical comparison between the incidence of cancer in different communities it is necessary to know: (1) The size of the population in the community; (2) its age-constitution; (3) the facilities for medical examination and readiness on the part of the community to avail themselves of medical help; (4) the facilities for post-mortem examination, since even with the best medical service available about 30 per cent. of cases of cancer are only recognised at the post-mortem examination. In uncivilised races our knowledge of (1) and (2) is nil, facilities for (4) are nil, and facilities for (3) are much less than in a civilised community. Even between different civilised communities a useful comparison of cancer statistics is impossible unless facilities for (3) and (4) are about equal. As an example of the author's arguments we might refer to p. 27, where, in order to prove that "cancer is increasing in the most startling manner," he compares the death-rate from cancer in England in 1838–42 with that in 1921, and points out that it has increased sevenfold. In 1838–42 Virchow had not lived and pathology as a science did not exist. —ED. L.

CENTENARY OF UNIVERSITY COLLEGE, LONDON.

To the Editor of THE LANCET.

SIR,—The hundredth anniversary of the foundation of University College, London, will be celebrated in 1926. Materials (records, reminiscences, pictures, photographs, &c.) are being collected with a view to the production of a history of the College as a part of the centenary celebrations. The volume will include a chapter on the contribution of the College to medical education and research. Members and friends of the College are invited to send such materials as they can contribute to my care for the use of the historian, who will shortly be appointed. All documents will be carefully marked with the owner's names and will, in due course, be returned unless the owners desire to present them for the College archives. Communications and parcels (marked "Centenary") should be sent to me at the College.

I am, Sir, yours faithfully,

GREGORY FOSTER,
Fellow and Provost.

University College, London, July, 1924.

SCHOOL CLOSURE FOR INFECTIOUS DISEASE.

To the Editor of THE LANCET.

SIR,—The leading article in your issue of May 3rd hits off precisely the views accepted at our public school. Our practice is to let the parents know, while we advise them to allow the boys to remain. Should they remove them, they do so at their own risk. I recall that at the time of King George's coronation, when a week's holiday was granted at most public schools, our school was in the midst of an epidemic of measles. We advised parents that travel was a risk to boys who had not had measles, and we expressed willingness to keep unprotected boys, of whom a few stayed. Although every boy who had not had measles was carefully examined before leaving, at least three developed the disease on their long journey home. One of these nearly died and was never fit for school again. In the influenza outbreak of 1918 all parents were urged not to take their boys home until after the epidemic was over. Only on special request, and with a signed statement that all risks were accepted, was any boy allowed to leave, and only a few went. One who lived in Edinburgh developed influenza on the journey and died of pneumonia. This was the only death in connexion with the school. 410 cases were nursed here, all of which recovered and were able to go home at Christmas. Every house was converted into a hospital; directly a boy complained he was put to bed and examined. The results of these two epidemics would certainly have removed any doubts I may previously have cherished. Further, in the summer of 1922, when we had 127 cases of measles, the school kept going, and every case did well. Of course, a school should have sanatorium accommodation adequate to its numbers, and it is notorious that preparatory and boarding schools are often short of such accommodation, when there is nothing for it but to send the unfortunate children home. Paragraph XXIII. of the Code of Rules drawn up by the Society of Medical Officers of Schools is clear, and I agree with it. As for the elementary schools, the unfortunate medical officer is pretty well bound to close the school when attendances drop, to save financial loss through stoppage of grants.

You will have done good if you wake up public opinion against a practice which results in the school authorities taking fees and doing little or nothing in return except avail themselves of the opportunity to shut down on the outbreak of infectious disease. There is the risk of spreading the particular infection at home.

I am, Sir, yours faithfully,

MEDICAL OFFICER TO A PUBLIC SCHOOL.

July 15th, 1924.

A CHEMICAL ENCYCLOPÆDIA.

To the Editor of THE LANCET.

SIR,—I feel bound to make a protest against the scandalous way in which my Chemical Encyclopædia (third edition) has been dealt with by your reviewer in THE LANCET of July 5th, and would call your attention to the reviews given in the *Chemical Trade Journal* of May 9th and the *Pharmaceutical Journal* of May 17th, both of which are enclosed herewith, and which will show you that the book covers practically the whole areas of chemical science, materials, theory, terms, and its application to chemical industries and chemical engineering. No attempt has ever been made before to produce an encyclopædia covering so much ground and (according to the general consensus of expressed opinions) the task has not been unsuccessfully accomplished; yet your reviewer dismisses such laboriously achieved work with a somewhat contemptuous reference of eight lines.

In conclusion, I would refer you to THE LANCET review of the second edition (which was a work of a much smaller and less comprehensive character) given in your issue of Feb. 18th, 1922, and I hope you will see some way of doing more justice to me in the matter.

I am, Sir, yours faithfully,

Weybridge, July 7th, 1924. C. T. KINGZETT.

*** The works of direct professional interest are now very numerous and our space is chiefly employed in the attempt to notice them fully and promptly. There is nothing contemptuous whatever in a brief review, at least in intention, especially where the work in question is in its third edition.—ED. L.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Public Health in Scotland.

SPEAKING in the House of Commons on July 3rd on a vote of £1,897,832 to complete the sum necessary to defray the salaries and expenses of the Scottish Board of Health, Mr. JAMES STEWART (Parliamentary Under-Secretary of Health for Scotland) reported that the year 1923, measured by the death-rate, was the healthiest year on record. The general death-rate fell to the low figure of 12·9 per 1000 of the population, the lowest previous rate being 13·6 per 1000 in 1921. Realising the importance of the health services of the country, one of the first actions of the Government had been to remove the embargo placed on the development of those services by the late Government, and the local authorities had responded to their action by submitting for the approval of the Board of Health developments and extensions of schemes which had been hung up owing to the embargo. It must be their aim to use to the fullest extent the resources of medical and sanitary science in diminishing the heavy burden of sickness, a large part of which was capable of being treated on preventive lines. In addition to measures for better housing, it was necessary to prevent the pollution of the atmosphere by smoke. He hoped a Bill dealing with smoke abatement in Scotland would be introduced at an early date.

There was increasing evidence that the shortage of hospital accommodation in Scotland was a serious gap in the community's protective organisation against disease. Some steps must be taken to repair it by securing closer coöperation between the voluntary hospitals and the Poor-law and public health hospitals. Impressed with the importance of the subject, the Board of Health had recently appointed a Departmental Committee, presided over by Lord Mackenzie, "to inquire into and to report upon the extent and nature of the inadequacy of the present hospital and ancillary services in Scotland, and to make recommendations for the development and maintenance of these services to meet the needs of the community."

Mortality from Tuberculosis.

Slowly but steadily the mortality from tuberculosis was lessening. In 1914 the deaths from that disease numbered 7696, whereas in 1923 they had fallen to 5786. In 1894 the death-rate in Scotland from pulmonary tuberculosis was 172 per 100,000 of the population; in 1914 the corresponding rate had fallen to 104, and in 1923 it had been still further reduced to 81. In respect of pulmonary tuberculosis Scotland had now a lower death-rate than England and Ireland. In the same period of 30 years the death-rate from non-pulmonary tuberculosis had fallen from 63 per 100,000 of the population in 1894 to 58 in 1914 and 36 in 1923. Notwithstanding the fact that the death-rate from this form of the disease showed a fall of 38 per cent. since 1914, Scotland occupied the unenviable position of having the highest death-rate of any of the three countries from non-pulmonary tuberculosis. But he had great hopes that the efforts of the local authorities would soon produce beneficial results which would be reflected in a still further substantial diminution of the death-rate.

There had been a substantial addition to the number of sanatorium and hospital beds reserved for the treatment of this disease. In 1918, at the close of the war, the number of such beds was 2590; to-day there were 3953 beds, and when the extensions, particularly in Glasgow, were finished they would have over 4800 beds reserved for the treatment of this disease. Local authorities must be encouraged to carry on and extend their activities where necessary. The local authorities would now receive in grant 50 per cent. of all reasonable expenditure in connexion with the treatment of this disease.

Maternity and Child Welfare.

With regard to maternity and child welfare in 1923, the deaths under 1 year numbered 80,825, equivalent to a death-rate of 78·9 per 1000 births. This was the lowest infantile death-rate ever recorded for Scotland. The deaths for 1923 over 1 year and under 5 years numbered 4926, equivalent to 12·3 per 1000 children within those ages. Here, again, the death-rate was the lowest on record for Scotland. In 1915 14,441 infants died under 1 year, equivalent to a death-rate of 126·5 per 1000 births, and 9120 children from 1 year to 5 years died, equal to a death-rate of 22·5 per 1000 children of those ages. Unfortunately, while the process of reducing the mortality among infants had been continuous, it was far from being a steady progress. In the first quarter of 1924 the infantile mortality-rate in Scotland rose to 132 per 1000 births, against 98 for the corresponding quarter in 1923. Only in June did the death-rate among children return to a less alarming level. In large measure this high mortality was due to a widespread epidemic of measles and whooping-cough, and to other diseases such as pneumonia that followed these infections. The Scottish Board of Health had issued a circular to local authorities with regard to the further control and treatment of these epidemic diseases, and a special sum of £10,000 had been set aside as part of the maternity and child welfare grant which would be distributed in a manner designed to encourage local authorities to institute further measures for the preservation of child life from the ravages of these very deadly diseases.

A special inquiry in 1908 revealed the following general facts regarding measles, which, like tuberculosis, was a poverty disease. The death-rate from measles in one-room houses was 92, in two-room houses it was 46, in three-room houses it was 25, and in four rooms and over it was 15. The Board proposed to make the disease notifiable, appoint a special *ad hoc* staff of visiting nurses for infectious diseases, increased hospital facilities, and an increased service of health visitors. In 1923 a committee was appointed to inquire into puerperal morbidity and mortality. The deaths of women in childbirth in Scotland numbered over 700 annually, and the amount of sickness and disablement which did not result in death was very great. In their report the Committee expressed with confidence the view that puerperal morbidity and mortality were largely avoidable and could be reduced by improvement of the midwifery service and by the provision of antenatal care for the expectant mother. The Board had invited local authorities to submit detailed proposals on the lines suggested by the Committee.

No restriction would be placed on the development of maternity service and child welfare schemes otherwise provided that the Board were satisfied with the proposals on the merits. The rationing scheme for calculating grant on food and milk expenditure had now been withdrawn and grant was paid at the full rate of 10s. per £ on expenditure, supported by the certificate of a responsible medical officer that he considered after examination that additional nourishment was necessary.

The opening of new venereal disease centres was proceeding steadily, but it was disquieting to observe that no less than 53 per cent. of patients discontinued treatment without the sanction of the medical officer. This fact made it necessary to consider whether local authorities did not require further powers to deal more effectively with venereal disease.

"Sleeping sickness" was increasing. It was hoped that investigations that were being made would before long lead to the discovery of an effective method of treatment. During 1923 and the current year a number of cases of infective jaundice had occurred in East Lothian and Midlothian. The majority of those affected were miners, and all worked in the neighbourhood of two contiguous pits. There had been 15 cases and four deaths. The disease was associated with a disease of rats, which was due to the same organism, and though it had not been definitely settled how the disease was conveyed from rat to man, it was necessary that as far as possible rats should be trapped and killed and their access to the pits prevented. The matter of infective jaundice was being dealt with by the Medical Research Department and had now been referred to the Mines Department. The Board were awaiting the result. In conclusion, Mr. Stewart referred to the distress in the Highlands and Islands, and said that the Board were paying attention to this matter in the hope that in the near future they might be able to make recommendations dealing with the general health of the community in the direction of solving this problem.

HOUSE OF LORDS.

MONDAY, JULY 14TH.

Royal Commission on Lunacy.

THE LORD CHANCELLOR moved the following:—"In order to bring the Tribunals of Inquiry (Evidence) Act, 1921, into operation, it is expedient that a tribunal be established for inquiring into (1) the existing law and administrative machinery in England and Wales in connexion with the certification, detention, and care of persons who are or are alleged to be of unsound mind; and (2) the extent to which provision is or should be made in England and Wales for the treatment without certification of persons suffering from mental disorder." He explained that the object of the motion was to enable the Royal Commission on Lunacy to call witnesses and examine them on oath. The motion was agreed to.

HOUSE OF COMMONS.

WEDNESDAY, JULY 9TH.

Medical Test of Temporary Civil Servants.

Mr. HORE-BELISHA asked the Parliamentary Secretary to the Admiralty, with reference to the examination which was contemplated for ex-Service men employed as temporary civil servants under the Admiralty, whether he was aware

of the great hardship which such examination imposed upon those who had done good service to the country, and why they had now to submit to an educational, departmental, and medical test to ascertain whether they were fit for retention in their present capacity, although they had given every satisfaction and had demonstrated their ability; and whether he could exempt these men from the examination proposed or their dismissal as the result of such examination.—Mr. AMMON replied: The examination which was held on July 3rd was of a comparatively simple character and suited to the age of the ex-Service competitors, and should not have imposed great hardship on any of the candidates. Appointments of temporary clerks to the clerical grades of the Civil Service are made by examination and this practice has been endorsed by Lord Southborough's Committee in its final report. No person can be given an established post until he has satisfied the Civil Service Commissioners of his physical fitness, amongst other factors. As I have already explained to the hon. Member, there is provision for the medical standard to be relaxed in the favour of men whose health has been impaired as a result of service in the forces in the late war.

New Mental Hospitals.

Mr. ROBERT RICHARDSON asked the Minister of Health what schemes were in contemplation for the building of new asylums and other mental institutions; in view of the declaration in 1922 of a surplus of 18,000 beds, would he explain why such extension was necessary; and whether it was the intention of the Board of Control to offer this increased accommodation to uncertified cases for the purpose of retaining them under their own authority instead of encouraging the provision of hospitals apart from lunacy, and run by the health committees of local authorities for the benefit of slight and non-dangerous cases, where they could recover without risk of stigma.—Mr. WHEATLEY replied: Only one scheme for the building of a new mental hospital is in contemplation, but further accommodation will be needed in the near future. The figure of 18,000 beds was an estimate made at the end of 1920; but, for various reasons, certain schemes then foreshadowed were not proceeded with. On Jan. 1st in the present year there were, in fact, only 4754 vacant beds. As the average annual increase of certified patients during the last two years has been at the rate of 3266, it is obvious that further provision is necessary. The question whether provision should be made for the early treatment of cases of mental disorder without certification is one of the principal matters referred to the Royal Commission recently appointed.

Hendon Institute Lymph.

Mr. BLACK asked the Minister of Health whether any records had been kept showing the pedigree of the lymph used at the Hendon Institute.—Mr. WHEATLEY replied: Yes, Sir.

Court of Appeal for Certified Lunatics.

Mr. ROBERT RICHARDSON asked the Minister of Health if his attention had been called to the remarks of Lord Justice Scrutton, on the occasion of the appeal against Harnett, in regard to the necessity for a thorough examination into the grounds on which an alleged lunatic was imprisoned as well as the desirability that he should at certain intervals during detention have the opportunity of demanding an independent investigation into his case; and, in the interests of justice to the public, would he take steps to institute a court of appeal for those imprisoned in asylums, after the analogy of the court of appeal provided for other classes of prisoners.—Mr. WHEATLEY replied: The points raised in this question come within the terms of reference of the Royal Commission on Lunacy and Mental Disorder, which has just been appointed; and any action in the matter should, I think, be deferred until the Royal Commission has reported.

Bodies of Paupers for Medical Dissection.

Mr. PENNY asked the Minister of Health whether he was aware that his department had officially approached the Kingston board of guardians with a view to making arrangements for that authority to hand over the bodies of dead friendless paupers to the London hospitals for dissection purposes; in view of the odium which such a step threw upon the guardians, many of whom were averse to the proposal, would he reconsider the whole matter, and would he say whether similar overtures had been made to other boards of guardians throughout the country.—Mr. WHEATLEY replied: Yes, Sir, the application to Kingston guardians was made with my authority and in this matter I have followed the invariable practice of my predecessors of all parties and of successive Home Secretaries with whom the responsibility under the Anatomy Acts rested prior to the transfer of this duty to the Minister of Health. I recognise the very natural objections which such a proposal must at first sight provoke, but I am satisfied that there is no alternative which would not have disastrous effects on surgical and medical education, and ultimately on the treatment of the sick. The effective teaching of anatomy and operative surgery, which form an essential part of medical education, will become impossible unless the necessary subjects can be made available for practical instruction. If anatomy cannot be taught by the examination of the dead it will have to be learned by experiment on the living; and except in the case of the comparatively small number of students who could afford to go abroad for their anatomical study, young practitioners would be compelled to acquire by experimenting on their patients the knowledge which it would have been impossible to impart to them in the medical schools. Many other unions throughout the country, including those adjacent to Kingston, are coöperating with the department in this matter, and I am glad to learn that it is generally recognised by the guardians that the poor would be the first to suffer if medical students could not obtain the necessary teaching without going abroad for it. I would add that the Anatomy Acts contain detailed provisions as to the conditions under which bodies are to be used for this purpose, and these provisions are stringently enforced under the constant supervision of H.M. Inspector of Anatomy. All bodies used for this purpose are duly interred within the prescribed period after a religious service appropriate to the denomination to which the deceased belonged and the place of burial is carefully recorded. It is impracticable to rely for this purpose upon those who voluntarily leave their bodies by will to be used for anatomical teaching, since the number is wholly insufficient. I would add that the reason for seeking the coöperation of the guardians is not the poverty of the persons concerned, but the fact that they have no known or traceable relatives to claim the body for burial, and therefore there is no one to be distressed by the use of the body for purposes which are vitally necessary to the proper teaching of medicine.

Deaths from Small-pox, &c.

Mr. GILBERT asked the Minister of Health how many deaths had been registered this year from small-pox, measles, pneumonia, scarlet fever, diphtheria, influenza, and encephalitis lethargica.—Mr. WHEATLEY replied: According to the provisional figures received by the Registrar-General, the deaths registered in England and Wales in the quarter ended March 31st last included: Small-pox 3, measles 1741, scarlet fever 263, diphtheria 742, encephalitis lethargica 229. No separate figures are at present available of deaths from pneumonia or deaths from influenza. The returns for the second quarter ended June 30th are only now being received, and the corresponding figures for that quarter cannot yet be given, but I will furnish the hon. Member with these figures as soon as they are available.

Women Medical Officers and Antenatal Clinics.

Mr. COSTELLO asked the Minister of Health whether he was aware that in certain districts the antenatal and other clinics were not so successful as they otherwise would be, owing to a natural disinclination on the part of many women to go themselves or to take their adolescent daughters to clinics which were under the charge of men medical officers or assistant medical officers of health, especially in those districts where there was a woman assistant medical officer available for such work; and whether he will take steps to ensure that, at any rate in districts where there were already women assistant medical officers, the work in connexion with women and the older girls should be undertaken by the women medical officers and not by the men, and that upon vacancies occurring in public health appointments, the duties of which consisted wholly or mainly of the kind of work above mentioned, such vacancies should be filled by women in preference to men.—Mr. WHEATLEY replied: I have no information to support the statement in the first part of the question. As regards the second part, while I favour the employment of women medical officers to take charge of antenatal clinics, I am not prepared to require that this should be done in all cases.

Free Supply of Insulin by Poor-law Authorities.

Captain REGINALD TERRELL asked the Minister of Health if, in view of the reduction of the price of insulin, it was supplied free by all Poor-law authorities on the recommendation of their respective medical officers.—Mr. WHEATLEY replied: I have no reason to suppose that Poor-law authorities are not supplying insulin in all proper cases in which application is made to them and supported by their medical officers.

Women Workers in Hospitals.

Miss JEWSON asked the Minister of Pensions whether the recent reduction in the wages of women working in hospitals run by the Ministry of Pensions had been general; and, if so, on whose instructions.—Mr. J. W. MUIR (Parliamentary Secretary to the Ministry of Pensions) replied: No general reduction has been made in the rates of pay of women employed in Ministry institutions; but in view of the fall in the cost of living since these rates were originally fixed

it has been necessary to pass them under review, and where it has been found that the rate paid is in excess of the local rate for similar work or of the rates paid in other comparable institutions, a small reduction has been made. The staff affected is under 20 per cent. of the total number whose wages have been reconsidered. I am sending the hon. Member a comparative statement of the old and the new rates.

THURSDAY, JULY 10TH.

Incurable Tuberculosis Patients at Maidstone.

Major WILLIAMS asked the Minister of Pensions if, by legislative or administrative action, he could place on a permanent and more satisfactory basis the pensions of men suffering from incurable tuberculosis in Preston Hall, near Maidstone.—Mr. F. O. ROBERTS replied: The men suffering from tuberculosis who are inmates of Preston Hall are in that institution either for periods of treatment or for treatment combined with a course of training. Such cases are not, therefore, in a condition in which a final award could properly be determined in the interests of the men themselves.

Pensioners and Final Awards.

Mr. AYLES asked the Minister of Pensions whether, in view of the general dissatisfaction existing in regard to the system of making final awards to pensioners whose disabilities were assessed at less than 20 per cent., he would take steps to abolish this system at an early date.—Mr. F. O. ROBERTS replied: I am not at present convinced that the course suggested, which would involve amendment of the Act, is called for. Cases of the class referred to, like those of any other class, in which it is shown that the last award was erroneously declared final, will, it is anticipated, be met by the arrangements which have recently been introduced to deal with cases of serious error. I am carefully watching the operation of these arrangements. I may perhaps remind my hon. friend that cases of minor disablement have never, under the Pensions Warrants, been entitled to a continuing pension, and their position in this respect has not been affected by the final award.

Accommodation at Roehampton Hospital.

Mr. BECKER asked the Minister of Pensions if he could make inquiries into the accommodation at the Roehampton Hospital; and could steps be taken to speed up the fitting of artificial legs so that ex-Service men did not lose their day's work.—Mr. F. O. ROBERTS replied: The accommodation at Roehampton Hospital is ample, and I do not think that any avoidable delay occurs in fitting or repairing artificial legs. Moreover, every pensioner has been supplied with a duplicate leg, to be used while the first is under repair and the necessity for personal attendance at the hospital is thus, for the most part, avoided after a first fitment.

Small-pox Deaths in 1923.

Mr. BROMFIELD asked the Minister of Health what were the ages of the persons registered as having died from small-pox in the year 1923, and in what towns or villages they occurred.—Mr. WHEATLEY replied: The particulars of the deaths from small-pox in England and Wales during 1923 are as follows:—

Age of deceased.	Deceased's place of—	
	Death.	Residence.
1 month.	Small-pox hospital. Brockworth, Gloucester.	Gloucester.
10 months.	,,	,,
5 years.	,,	,,
63 ,,	,,	,,
28 ,,	Joyce Green Hospital. Dartford.	Neasden, Willesden.
55 ,,	,,	Battersea.
17 ,,	Chester.	Chester.

MONDAY, JULY 14TH.

A Medical Staff and Trade-Unionism.

Mr. EDMUND HARVEY asked the Minister of Health whether his attention had been called to the action of the guardians of the West Ham Union in informing the officers in their service, including the whole-time medical staff, matron, nurses, and indentured probationer nurses of the Whipps Cross Hospital, that they desired them to become members of a trade-union affiliated to the Trade Union Congress, and to the decision of the board of guardians to review the position with reference to existing officers at the expiration of two months from the adoption by the board of this recommendation; whether he has had any communication with the board as to their action in this matter; and, whether, in view of the special difficulties that the action of the guardians had caused to the medical and nursing staff, he would take steps to prevent the imposition of such a regulation by the board of guardians.—Mr. GREENWOOD replied: My right hon. friend is aware of the action of the guardians though he has not been in direct communication with them. The guardians do not appear to be exceeding their legal powers, and my right hon. friend does not see that the matter is one in which he could usefully take any action.

Purchases of Dangerous Drugs in Britain.

Captain WEDGWOOD BENN asked the Home Secretary how much opium was purchased by factories in Great Britain in 1923; how much morphia, how much heroin, and how much codeine was manufactured by the factories; and how much of each of these narcotics was sent abroad.—Mr. HENDERSON replied: I assume that by "factories" the hon. and gallant Member means only those firms which are licensed under the Dangerous Drugs Acts to manufacture morphine and heroin and their salts. The amount of opium imported and purchased by those firms in 1923 was 125,833 lb. The amount of morphine and its salts manufactured in 1923 was 254,337 oz., of which, however, 166,397 oz. were converted into heroin, codeine, or other derivatives of opium, leaving a net total of 87,940 oz., of which 78,611 oz. were exported. The amount of heroin manufactured in 1923 was 11,575 oz., and the total exports of heroin amounted to 12,011 oz. The amount of codeine manufactured in 1923 was 162,036 oz., of which 160,910 oz. were exported by the manufacturers. As codeine is not subject to the Dangerous Drugs Acts, its movements are not recorded after it leaves the manufacturers, and it is not therefore known whether any other amounts of codeine were exported during 1923 by persons other than the manufacturers.

The Services.

ROYAL ARMY MEDICAL CORPS.

ARMY RESERVE OF OFFICERS.

Army Dental Corps: Lt. P. Colk, from Green Howards, Res. of Off., to be Lt.

TERRITORIAL ARMY.

Maj. J. W. Craven to be Lt.-Col. and to Comd. 149th (Northern) Field Ambulance, vice Lt.-Col. F. Hawthorn vacated on completion of tenure of comd.

Lt. H. M. Brown to be Capt.

ROYAL AIR FORCE.

H. W. Corner is granted a short service commission as a Flying Officer.

Flight Lt. T. A. G. Hudson is transferred to the Reserve, Class D.2.

Flying Officer K. R. Smith relinquishes his temporary commission on ceasing to be employed.

SIR MALCOLM MORRIS MEMORIAL FUND.

Dr. Howard Mummery, the hon. secretary of the Committee, sends the following supplementary list of subscribers to this Fund. The total to date is £409 8*s.* 2*d.*

Dr. George C. Andrews and Mrs. Angell.
Sir Anthony A. Bowlby and Dr. Walter Broadbent.
Sir Felix Cassel and Sir Francis H. Champneys.
Dr. Mary Doule and Sir Dyce Duckworth.
Lady Emmott.
Mr. Walter Farris, Dr. Wilfrid S. Fox, and Mr. H. W. Fraser.
Mrs. James Gow, Hon. Walter Guinness, M.P.
Dr. C. O. Hawthorne and Mr. Edward M. House.
Mr. Warwick James and Mr. and Mrs. L. Jopling.
Mr. Richard Llewellyn.
Dr. G. M. MacKee, Dr. Henry E. Michelson, Dr. R. Pryce Mitchell, Lady Morris, Miss C. Morris, Miss G. Morris, Mr. Harold S. Morris, K.C., and Miss Hilda Morris.
National Council for Combating Venereal Diseases, N.C.C.V.D., Hull Branch, and N.C.C.V.D., Plymouth Branch.
Mr. A. E. Hayward Pinch and Mr. W. A. Posnett.
Mr. and Mrs. John Rivers and Sir Leonard Rogers.
Mr. Henry S. Saint, Dr. Henry Semon, and Mr. C. F. Sutcliffe.
Captain Oskar Teichman.
Miss Edith Wethered and Mr. A. Hamilton Wood.

Further subscriptions will be gratefully acknowledged if forwarded to the hon. treasurers, Sir Malcolm Morris Memorial Fund, at 12, Stratford-place, London, W. 1.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At a quarterly meeting of the Council of the College Sir John Bland-Sutton was re-elected President and Mr. H. J. Waring re-elected and Mr. Walter G. Spencer elected Vice-Presidents for the ensuing year. Mr. W. McAdam Eccles, Mr. Wilfred Trotter, and Sir Charles Gordon-Watson, having been duly elected at the meeting of Fellows on July 3rd, were introduced and took their seats as members of the Council. Mr. Donald Kennedy Cassels, B.A. Camb., was appointed Assistant to the Secretary during the ensuing year. Mr. R. H. Burne was re-elected Pathological Curator and Sir Frank Colyer was re-elected Hon. Curator of the Odontological Collection. Mr. Cecil F. Beadles was reappointed Assistant Pathological Curator and Mr Clement E. Shattock was reappointed Pathological Assistant in the Museum for the ensuing year.—On the advice of the Museum Committee the office of Pathological Curator of the Museum was left vacant for the present. Mr. T. W. P. Lawrence, F.R.C.S., was invited to advise and assist in rearranging and revising the series of special pathology in the Museum.—It was announced that the Library of the College would be closed in August as well as in September for the purpose of cleaning and re-decorating.—A letter of July 3rd was read from the Chairman of the Lister Memorial Committee reporting that thr Lister Medal for distinguished contributions to surgical science had been awarded to Sir W. Watson Cheyne, Bart., and that, in compliance with the conditions of the Trust, Sir Watson Cheyne had undertaken to give an address at the Royal College of Surgeons on some date in 1925 convenient to the President and Council.

The following gentlemen were elected professors and lecturers for the ensuing year:—

Hunterian Professors.—Sir Arthur Keith: Six lectures on the Evolution of the Higher Primates. R. Lawford Knaggs: One lecture on Osteitis Deformans and its Connexion with Osteitis Fibrosa and Osteomalacia. V. Zachary Cope: One lecture on Extravasation of Bile. A. Herapath Todd: One lecture on Syphilitic Arthritis. Victor E. Negus: One lecture on Disorders of the Mechanism of the Larynx. H. P. Winsbury White: One lecture on the Pathology of Hydronephrosis. Stanford Cade: One lecture on Regional Anæsthesia.

Arris and Gale Lecturers.—Cecil P. G. Wakeley: One lecture on the Ætiology, Pathology, and Treatment of Ectopic and Imperfect Descent of the Testis. George Scott Williamson: Two lectures on the Anatomy and Physiology of the Thyroid Apparatus.

Erasmus Wilson Lecturer.—Gilbert W. de Poulton Nicholson: Three lectures on the Nature of Tumour Formation.

Arnott Demonstrator.—Sir Arthur Keith: Six demonstrations on the Contents of the Museum.

Licences to practise dentistry were conferred upon the following 63 candidates, who have passed the requisite examinations and have complied with the by-laws:—

L. P. Allen, London; L. N. Alley, Manchester; P. R. Asplet, Manchester and Royal Dental; J. Badenhorst, Royal Dental; E. A. Balkwill, Birmingham; W. J. Barnard, Guy's; D. C. Blyth, Royal Dental; W. R. Booth, London; W. L. Breese, Royal Dental; D. F. G. Came, Middlesex; H. Cantor and P. L. Carnall, London; S. D. Cloete, Royal Dental; A. Critchley, Manchester; E. J. B. Curtis, Guy's; J. M. Davies, Univ. Coll.; A. E. Davis and C. E. Day, Royal Dental; R. S. De Bruyn, Guy's; M. B. Deverell and A. Dreaper, Royal Dental; P. J. Du Toit and E. F. Farmer, Guy's; A. Fleming, Durham; C. H. Fox and W. H. Foy, Guy's; P. D. Gausden, London; E. E. Gibson, Guy's; Sarah Glasstone, Univ. Coll.; F. H. Goddard, Guy's; J. F. Godfrey, Birmingham; H. E. Hovell and V. W. Humpherson, Royal Dental; K. Huxtable, Bristol; N. H. Jenkins, Royal Dental; A. F. King, Guy's; F. W. Lambert and A. P. McClare, London; M. Marais, Royal Dental; P. M. Margand, Univ. Coll.; J. W. Mitchell, London; F. E. Padgett and L. Page, Royal Dental; Marjorie E. C. Page, Univ. Coll.; N. Parkinson and K. F. Pedley, Guy's; H. L. Pretty, London; P. Rosen, Royal Dental; J. C. Rowbotham, Guy's; C. G. Searle, Univ. Coll.; W. H. Shapland, London; Ita N. Shatz, Royal Dental; N. H. Simmonds, Bristol; M. Sperber, S. G. A. Stephenson, and B. J. Swyer, London; J. H. Threlfall, Univ. Coll.; G. G. T. Tregarthen, Guy's; W. A. Turner, Royal Dental; H. P. R. Williams, Guy's; R. N. Winnett, London; R. Woodcock, Sheffield; and B. Woolich, London.

The undermentioned diplomas were conferred (in conjunction with the Royal College of Physicians of London):—

Diploma in Public Health.—H. L. Barker and Joyce R. Batten, Univ. Coll.; W. G. Booth, King's Coll.; L. P. Costobadie, Cambridge and Manchester; A. Crawford, Glasgow and Roy. Inst. Public Health; B. B. Dalal, Bombay and Univ. Coll.; Edith M. P. Davies, Royal Free and King's Coll.; S. R. E. Davies, Cambridge and St. Bart.'s; Helen M. Du Buisson, King's Coll.; Mary Esslemont, Aberdeen and King's Coll.; Gwladys Evans, Univ. Coll.; Dorothy J. L. Gallie, Glasgow and Univ. Coll.; P. C. C. Garnham, St. Bart.'s; G. M. Hargreaves, Edinburgh and Univ. Coll.; Marjorie C. Hawkins, Roy. Inst. Public Health; N. R. Jenkins, Cardiff and Roy. Inst. Public Health; Elspeth H. R. Livingstone, Edinburgh and Univ. Coll.; V. A. Luna, Guy's and Univ. Coll.; Kathleen F. Matthews, Univ. Coll.; Alice D. Pocock, Royal Free and Univ. Coll.; A. T. W. Powell, Guy's; I. N. O. Price, Univ. Coll.; Violet Reade, Royal Free and King's Coll.; Grace Stevenson, Otago and Univ. Coll.; Emma M. Store, Royal Free and Univ. Coll.; E. Tagoe, Cambridge and Univ. Coll.; Blanchette Thomas, Univ. Coll.; P. Thwaites, St. Bart.'s; E. H. Wilkins, Dublin and King's Coll.; Gwendolen Wilson, Aberdeen and Univ. Coll.; and J. G. Wilson, King's Coll.

Diploma in Laryngology and Otology.—W. R. Beavis, Birmingham Ear and Throat Hosp.; J. B. Cavenagh, Oxford and St. Thomas's; J. Hare, Durham and Roy. Army Med. Coll.; H. I. Marriner, St. Thomas's; and T. G. Wynne, Melbourne and Central London Throat and Nose Hosp.

Diploma in Psychological Medicine.—J. S. Harris, Edinburgh and Hanwell; W. J. T. Kimber, St. Thomas's and Hill End; N. Macleod, Edinburgh, Leeds, and York; E. G. T. Poynder, Middlesex and Epsom; and D. Slight, Edinburgh.

LONDON SCHOOL OF TROPICAL MEDICINE.—The following candidates passed the terminal examination of the seventy-fifth session of the School (April to July, 1924) with distinction:—

A. W. Grace (winner of "Laicaca" and "Duncan" medals), B. B. Yodh, W. Rae, T. Creaser, R. B. Wallace, G. C. Ramsay, and R. Dick.

UNIVERSITY OF MANCHESTER.—At examinations held recently the following candidates were successful in the subjects indicated:—

FINAL M.B. AND CH.B. EXAMINATION.

Margaret A. Bromhall, W. C. V. Brothwood, T. A. Brown, *J. A. Crowther, Madge E. Edwards, Reginald Ellis, A. G. Forbes, Philip Gregory, Edward Holmes, †Winifred L. Horton, W. G. Howson, *Phyllis I. Kaufmann, David Kemp, *‡Hilda M. Linford, F. R. Lockhart, Gladys F. A. McLean, Alice M. Orrell, Thomas Peirson, Samuel Pope, L. J. Prosser, Albert Riley, W. M. Roberts, Eileen Sheehan, Dorothy Simmons, John Sims, G. S. Smith, James Troup, H. M. Turner, C. L. Walker, Eric Whiteside, †Charles Wilcocks, and Geoffrey Williamson.

* Second-class honours. † Distinction in Medicine.
‡ Distinction in Forensic Medicine.

Obstetrics and Surgery.—A. R. Addey-Redfern, J. K. Barr, C. V. Brown, Stella H. Brown, Elsie Catlow, William Chadwick, S. F. Clegg, Jenny D. Craig, Stanley Devine, Florence M. Duckworth, Charles Eccleston, J. D. Farquhar, R. A. Ferguson, James Haslam, G. H. Hayle, §A. H. Heyworth, Elizabeth G. Humble, A. M. MacGill, William Mottershead, Ethel Morris, Henry Penman, T. W. Rothwell, H. T. Simmons, A. B. Slack, Robert Slater, H. C. Smith, Ronald Walshaw, S. E. Ward, Samuel Whalley, R. M. Williams, S. P. Wilson, K. K. Wood, P. B. Wood, and Frank Yates.

§ Distinction in Obstetrics.

Forensic Medicine and Hygiene and Preventive Medicine.—R. S. Adam, William Chadwick, T. E. Davies, C. R. Fielding, A. H. Heyworth, J. N. Hudson, T. W. Rothwell, R. F. Stubbs, and J. M. Yoffey.

Forensic Medicine.—Solomon Bernstein, J. W. Graham, Robert Slater, and A. R. Somerford.

Obstetrics.—C. T. Marshall, Joseph Shlosberg, E. J. Warburton, and J. M. Yoffey.

Surgery.—P. G. Johnson and R. F. Stubbs.

Medicine.—J. M. Yoffey.

Hygiene and Preventive Medicine.—Anne H. Glancy and E. J. Warburton.

DIPLOMA IN PSYCHOLOGICAL MEDICINE.

Part II.—L. C. F. Chevens, H. D. Cormac, T. W. Davidson, W. J. Lynch, and W. R. McGlashen.

DIPLOMA IN PUBLIC HEALTH.

Part II.—F. R. Ferguson Marjorie A. Grant, Gladys J. C. Russell, Enid F. Stowell, and Ethel White.

The Vice-Chancellor, in his annual report for the session 1923–24, states that the number of students in the Faculty of Medicine was 686, of whom 128 were women. The following comparative statement shows the total number of students in the Faculty of Medicine: 353 (1917–18), 538 (1918–19), 771 (1919–20), 754 (1920–21), 734 (1921–22), 711 (1922–23), 686 (1923–24). Amongst the donations to the medical faculty were £200 from Prof. A. V. Hill, F.R.S., for the establishment of a prize in biochemistry, and £2028 from the trustee of the late Mrs. Morrison Watson for the foundation of an exhibition or scholarship in anatomy in memory of her husband, who was for many years professor of anatomy in Owens College and the University. In October, 1923, the new curriculum was inaugurated according to the recommendation of the General Medical Council, which entails six years' work in the medical school for the degree course. A student will not be registered by the General Medical Council as a medical student until he has passed the science examination in chemistry and physics. The longer period of studentship did not reduce the entries below the normal in number, as 53 students were registered for the first year of the degree course in October. A course for the Diploma in Psychological Medicine, instituted before the war, was given this session and was attended by six qualified men. New regulations for the Diploma in Public

Health, to meet the requirements set out by the General Medical Council, are now in force and the first course under the new regulations will commence in October next.

UNIVERSITY OF ABERDEEN.—At the graduation ceremonial on July 10th degrees were conferred in the Faculty of Medicine on the following successful candidates:—

DOCTOR OF MEDICINE.

*William Corner, *Robert J. Duthie, *Robert Forgan, *William I. Gerrard, Alastair R. Grant, Norman M. Maclennan, James Rannie, Robert Rannie, Henry J. Thomson, and Ian S. Thomson.

* Awarded commendation for thesis.

MASTER OF SURGERY.

Robert D. Lockhart and Foster H. B. Norrie.

BACHELOR OF MEDICINE AND BACHELOR OF SURGERY.

With First-class Honours.—*Anthony M. Hendry.

With Second-class Honours.—†Edward C. Chitty, †Richard B. Henderson, †John Innes, and †David West.

Ordinary Degree.—Redvers Anderson, John H. Arthur, Alexandra H. Benton, Kathleen Booth, Forbes Buchan, Andrew S. Burns, William Chisholm, Annie S. Clark, Mary Coutts, Edith Cran, Eirene V. Croll, James Crombie, John G. Currid, Francis R. Daniel, David Duncan, John C. Forbes, Stanley Forrest, Roderick M. Fraser, Ethel L. R. Galloway, Alexander D. Garden, †William C. Gorrod, James Hutcheon, Penuel M. Innes, Colin Joiner, Dudley W. Kirk, Flora H. G. Macdonald, John Macdonald, Thomas J. C. Macdonald, Robert H. Mackay, Roderick Mackay, Roderick Mackay, Alexander L. McLeod, Duncan Macleod, Christine Macrae, Charles P. Murray, Peter W. Philip, Alexander Reid, Alexander Reid, William M. Ritchie, Alexander Rose, †Cyril J. Sandford, William N. Simpson, James M. Smith, Alexander Stalker, Norman Taggart, George J. M. Teunon, William G. Watson, and Herbert M. Wright.

* Completed Final Examination with much distinction.
† Completed Final Examination with distinction.

DIPLOMA IN PUBLIC HEALTH.

Catherine J. Clark, Eleanor M. Henderson, Charlotte S. Hendry, Roberta McLeish, Bethia M. Newlands, Violet M. G. Smith, John S. Taylor, and Gladys M. L. West.

The degree of honorary Doctor of Laws was conferred on Michael Comport Grabham, M.D., for unremitting services in scientific research.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At the monthly meeting of the Faculty held on July 7th William Kirkpatrick Anderson, M.B., Ch.B., (Glasgow), and Joseph Thomas Herbert Madill, M.B., Ch.B. (Chester), were admitted (after examination) as Fellows of the Faculty.

LONDON (R.F.H.) SCHOOL OF MEDICINE FOR WOMEN.—Research Fellowships, in connexion with the obstetrical and gynæcological unit, have been awarded to Miss Olive Rendel, M.D., B.S., and Miss Alfreda Baker, M.B., Ch.B. The donor of the funds for the Fellowships has also presented an electrocardiograph to the Royal Free Hospital. A "1916" bursary of the value of £50 a year for five years will be awarded to a student who has matriculated and who wishes to enter the school in October, 1924, to begin a full course of study for a medical degree. Full particulars can be obtained on application to the Warden and Secretary, 8, Hunter-street, London, W.C. 1. The Woman's Enquiry Bureau, No. 1, Quality-street, British Empire Exhibition, furnishes full particulars concerning the course of medical study at the school.

STUDY OF MALARIA IN EASTERN EUROPE.—The League of Nations Commission for the study of the incidence of malaria in Eastern Europe reached Moscow on July 13th in the course of its three months' tour. The Commission began its investigations in Jugoslavia at the end of May last, and has since visited Macedonia, Bulgaria, Roumania, and Poland. In Russia and the Ukraine the Commission is to study the principal malaria regions—namely, the Ukraine (Kharkov, Bakhmut and environs); Northern Caucasus (Rostov, Piatigorsk and neighbouring health resorts); the Volga region (Tsaritsyn, from Tsaritsyn to Nishni-Novgorod by boat along the Volga, Saratov Pokrovsk, the German Volga Republic; Kazan and the Tartar Republic). From Nishni-Novgorod the Commission will return to Moscow, where it will be shown the working of the Central Health Organisation and particularly the anti-malarial work of the Russian Health Service, and will take part in a conference on malaria. Leaving Russia on August 4th, the Commission will proceed to Italy to inspect the areas infected by malaria and to draw up a report on the results of the voyage. Throughout the journey the central health authorities of the countries visited have conducted the party and shown it both the actual conditions in the areas infected with malaria and the measures taken to instruct and organise the health service for combating this disease. The Commission will, therefore, be in a position to make an exhaustive report on the whole question of malaria in Southern and Eastern Europe. Prof. Nocht, Director of the Institute for Tropical Diseases in Hamburg, heads the Commission as vice-chairman, Great Britain, France, Italy, Spain, Roumania, Jugoslavia, and Russia also being represented.

UNIVERSITY OF LONDON.—The Sharpey physiological scholarship, founded in memory of Prof. William Sharpey, will shortly be filled, on the recommendation of the Faculty of Medical Sciences of University College, London. The value of the scholarship is £160 a year. The scholar is provided with full opportunities for advancing the study of physiology and of undertaking research. He takes a small share in teaching and demonstrating to students. Applications, containing a full statement of candidates' educational record, including a list of publications, if any, should be sent to the secretary of University College, London (Gower-street, London, W.C. 1), not later than Saturday, July 26th.

VISIT OF AMERICAN MEDICAL MEN TO GREAT BRITAIN.—Some 300 members of the Inter-State Post-Graduate Assembly will visit this country next year from June 1st to June 20th, and will be entertained at Liverpool, Leeds, Newcastle, Manchester, Glasgow, Belfast, and Dublin, and possibly at other places. During the visit the annual Congress of the Tri-State Medical Associations will be held under the presidency of Dr. W. J. Mayo, and the Royal Society of Medicine has placed at the disposal of the Congress some of its lecture rooms. There will be demonstrations at several of the large London hospitals. The visit will terminate by a trip to Paris. Local arrangements are in the hands of Sir Robert Jones, Sir Berkeley Moynihan, Sir William Milligan, Sir Harold Stiles, Sir William de Courcy Wheeler, Mr. Grey Turner, and Prof. Tuffier, of Paris, while the advisory committee in London will consist of Sir Humphry Rolleston, Sir William Hale-White, Sir StClair Thomson, Mr. H. J. Waring, and Mr. Philip Franklin, who is acting as the hon. secretary.

ROYAL EAR HOSPITAL.—Mr. Geoffrey E. Duveen, chairman of the Royal Ear Hospital, Dean-street, Soho, London, W., announces that negotiations have now been completed for the purchase of a site on which to rebuild the hospital. This site is situated on the corner of Huntley-street and Pancras-street, Bloomsbury, W.C., and is adjacent to University College Hospital and the new Rockefeller buildings. The chairman, himself a victim of deafness, made it possible to commence this scheme by a gift of £15,000 to the hospital. The gift is a memorial to his father, the late Mr. Henry J. Duveen. The work of clearing the site and building the new hospital will be put in hand as soon as possible.

THE LATE DR. W. A. EVANS.—The death occurred suddenly on July 7th of Dr. William Arnold Evans, of Oakworth, near Keithley, Yorks. Dr. Evans was found in a state of collapse in his surgery and died before medical aid could reach him. Dr. Evans qualified in 1883 as M.R.C.S. and L.S.A. In 1888 he took the M.D. of London University, in 1890 D.P.H. Camb., and B.Sc. Vict. in 1904. Before settling in practice in Bradford, he was for a time house physician in the Wolverhampton General Hospital, house physician at the Manchester Royal Infirmary, and resident at Monsall Fever Hospital. He was appointed medical officer of health for Bradford in 1891 and resigned this office in 1913, when he took up practice in Oakworth.

STAR AND GARTER HOME.—The King and Queen visited the Star and Garter Home for Disabled Sailors and Soldiers, Richmond, on July 10th, and were received by the Mayor of Richmond and others representing the borough. Lord Grenfell (the President), Sir Arthur Stanley and Sir William Bennett (chairman and vice-chairman of the governors), Lady Cowdray, Dame May Whitty, and Sir Edwin Cooper, the hon. architect, conducted their Majesties to the reception room, where Sir Arthur Stanley described the origin of the Star and Garter scheme, and expressed the thanks of the governors to the donors who had helped to build and endow the home, specially mentioning Sir Edwin Cooper, who had given his services free of charge. Dame May Whitty, chairman of the British Women's Hospital Committee, outlined the activities of that Committee in raising money for the building of the home from British women at home and abroad. The Queen received the deeds of the building from Lady Cowdray, the hon. treasurer of the British Women's Hospital Committee, and accepted a handsome album from Sir Edwin Cooper. A short religious ceremony was held, after which a number of presentations were made to their Majesties, including members of the British Red Cross Society and the Order of St. John of Jerusalem, and the following members of the hon. medical staff of the Star and Garter: Sir David Ferrier (consulting physician), Mr. Percy Sargent (consulting surgeon), and Mr. John Matthews (consulting bacteriologist). The King and Queen then made an extensive tour of the building, and spoke to some of the disabled soldiers before taking their departure.

DOUGLAS, ISLE OF MAN.—On July 8th the Manx legislature passed a vote for £20,000 from revenue to build a maternity ward for the island at Douglas Hospital. The cost of maintenance will be borne by the hospital committee.

NORTH-EAST LONDON POST-GRADUATE COLLEGE.—An intensive course at the Prince of Wales's General Hospital will begin on July 21st and will last for 14 days. It will include lectures and demonstrations of clinical methods and cases, and work in the general wards and special departments of the hospital. Those proposing to take the course should send in their names to the Secretary of the Fellowship of Medicine, 1, Wimpole-street, W. 1, not later, if possible, than to-day, Friday, July 18th.

MANCHESTER'S BABIES' HOSPITAL.—In the view of the Public Health Committee this hospital is doing very good work, and a certain number of its beds are subsidised by the corporation and ear-marked for cases treated under the corporation's maternity and child welfare scheme. New wards to accommodate 80 patients are to be erected, and the Ministry of Health has already promised the grant of £6000, which will cover about one-half of the estimated cost of the new building. The corporation proposes to borrow £6000 and lend it to the board of management of the hospital. The board hopes to obtain £6000 by public subscription.

BRISTOL MEDICAL STUDENTS' VISIT TO BATH.—A large party of medical students from Bristol University visited the bathing establishment on July 11th, under the auspices of Dr. J. Odery Symes, to extend their knowledge of medical hydrology and study its practical application as carried out by means of the exceptionally complete installation at the hot mineral baths of Bath. They were received by Mr. John Hatton, the director of the baths, and after going over the establishment and seeing various demonstrations, heard a lecture from Dr. Vincent Coates on the types of diseases chiefly treated at Bath. After tea the party visited the Roman baths.

THE LATE DR. J. H. MAWSON.—On the night of July 10th Dr. James Hargreave Mawson, L.R.C.P. & S. Edin., of Leeds, sustained a fatal injury while riding his motor-cycle. He was conveyed to the Leeds Infirmary where he died shortly after admission. Dr. Mawson graduated in 1882 and had an extensive practice in the city and was a well-known member of the Leeds Medical Panel Committee under the Health Insurance Acts. He was of a retiring disposition and took little part in active public life, but he was held in high esteem by his fellow practitioners and was regarded as a valued and most useful member of the panel committee.

SPANISH DOCTORS IN LONDON.—A party of medical men from Spain arrived on July 17th on a visit to London, and have been accommodated at the Hotel Bedford, Southampton-row, W.C. They include Prof. Rafael Pizá, Prof. Ricardo Moragas, Dr. Domingo Duran Arrom, Dr. José Ma. Rosell, Dr. Luis de March, Dr. Juan San Ricart, Dr. Luis Vila Avadal, Dr. Francisco Humedas, Dr. Juan Sana, Prof. Domingo Carles, Mr. Arturo Claveria, Dr. Manuel Casanovas Camps, Mr. Pedro Casa Abarca, Dr. Pla y Armengol, Mr. Augustin Mestre. During the course of their visit lectures will be delivered in French by Dr. José Ma. Rosell on the Problem of the Intestinal Fermentations and Putrefactions, and by Dr. Pla y Armengol on the Bacteria of Tuberculosis; Dr. Armengol will also lecture in English on the Clinical Idea of Tuberculosis. As we go to press the date and place of these lectures are not settled.

MEDICATED WATER.—At the Conference of the British Waterworks Association held recently, Sir Alexander Houston, director of water examination to the Metropolitan Water Board, read a paper on Purification of Water-supplies. Sheffield, he said, was the first place to adopt the lime treatment of moorland water, in order to correct the acidity, harden the water, and prevent its solvent action on lead. The use of rain-water for drinking purposes should be encouraged. At the present time, he said, a remarkable physiological experiment on a large scale was being carried out at Rochester, United States, which had given rise to the Derbyshire suggestion of medicating the water-supplies at Chesterfield for the purpose of arresting goitre or "Derbyshire neck." Small doses of a salt of iodine were being artificially added to the water-supply bi-annually for two or three weeks at a time with the object of preventing thyroidism. Although it was contrary to ordinary medical teaching to force a whole population to drink treated water for the benefit of the minority, Switzerland had shown some precedent for the experiment. A majority of persons would probably consider that these matters were best left in the hands of family doctors or medical officers of schools, and that it was outside the province of a waterworks authority to administer preventive drugs wholesale even in harmless doses.

THE OXFORD PRESS LIBRARY.—The library at the new home of the Oxford University Press in Warwick-square, London, E.C., is now open, and all interested in books are at liberty to inspect therein at their leisure any of the volumes, which number some 10,000. There is a librarian in charge, who is ready to supply information or give advice.

DONATIONS AND BEQUESTS.—Among other legacies received during the past three weeks by the Edinburgh Royal Infirmary is one by Miss Jessie Aitken of Glenbervie, Larbert—sum to account of residue—£20,000 (permanent capital).—Sir Mortimer Singer has sent a cheque for £1000 to the Mayor of Torbay as a contribution to the Mayor's appeal for £80,000.—Among recent gifts to the British Red Cross Society for the British Empire Cancer Campaign is one of £3000 from an anonymous donor. The Staffordshire branch of the British Red Cross Society has sent £567, the Cheshire branch £240, and the Essex branch £204.—Dr. John Mallet Purser has offered to the Board of Trinity College, Dublin, where he is Regius Professor of Physics, £10,000 for the benefit of the school of physic and the schools of experimental and natural science.—The late Mr. John George Kincaid, of Greenock, left by will £1000 to the Greenock Royal Infirmary; £500 to the Greenock Eye Infirmary; and £500 to the Greenock District Nursing Association.—Under the will of the late Sir John Stewart Clark, Bart., the testator left £1000 to the Annie Clark Fund for Incurables, Paisley; £1000 to the Royal Alexandra Infirmary, Paisley; £1000 to the Royal Infirmary, Edinburgh; £500 to the Royal Victoria Eye Infirmary, Paisley; £500 to the Paisley Convalescent Home, West Kilbride; £500 to the Royal Edinburgh Hospital for Sick Children; and £500 to the Queen Victoria Jubilee Institute for Nurses, Edinburgh.—Mr. James Manfield, J.P., the head of Manfield and Sons, Limited, boot manufacturers, of Northampton, has given Weston Favell House, which he built about 25 years ago at a cost of over £100,000, to the Northampton Crippled Children's Fund for an orthopædic hospital. The house contains 23 bedrooms.

Medical Diary.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, July 21st, to SATURDAY, July 26th.—PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham. Special Intensive Course in Medicine and Surgery (first week).—ROYAL EYE HOSPITAL, Southwark, S.E. Mon., 10.30 A.M., Mr. A. D. Griffith: Operations. Tues., 3 P.M., Mr. L. V. Cargill: Lecture-Dem. on Operations. 5 P.M., Dr. J. Collier: Ocular Paralyses. Wed., 3 P.M., Clinical Cases. 5 P.M., Mr. A. D. Griffith: Cataract. Thurs., 3 P.M., Clinical Cases. 5 P.M., Mr. W. J. Lindsay: Eye Complications in Acute Fevers. Fri., 3 P.M., Clinical Cases. 5 P.M., Mr. E. A. Dorrell: The Pupil in Diseases of the Eye.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, July 21st.—11 A.M., Surgical Registrar: Surgical Wards. 2 P.M., Mr. Bishop Harman: Eye Dept. 2 P.M., Mr. Simson: Diseases of Women.

TUESDAY.—10 A.M., Dr. Drummond Robinson: Gynæcological Operations. 12 noon, Dr. Burrell: Chest Cases. 2 P.M., Mr. Sinclair: Surgical Out-patients.

WEDNESDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 11 A.M., Medical Registrar: Medical Wards. 2 P.M., Dr. Owen: Medical Out-patients.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 12 noon, Medical Registrar: Clinical Methods. 2 P.M., Surgical Registrar: Surgical Out-patients.

FRIDAY.—10 A.M., Mr. Dudley Buxton: Dental Dept. 11 A.M., Mr. Simson: Gynæcological Demonstration. 2 P.M., Mr. Banks-Davis: Throat, Nose, and Ear Dept.

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.

Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

Appointments.

BRUNTON, C. E., M.B. Camb., M.R.C.S., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Lyndhurst District of the County of Southampton.

CLARK, G. A., M.D. Durh., Lectureship in Physiology at the University of Sheffield.

DUNSCOMBE, CLEMENT, M.B., B.Ch. Camb., D.P.H., Assistant County Medical Officer of Health and Assistant School Medical Inspector for Wiltshire.

ELVINS, R. S., L.R.C.P. & S. Edin., L.R.F.P.S. Glasg., Police Surgeon at Scarborough.
FAGAN, R. F., M.B., B.S., D.P.H., Pathologist to St. John's Hospital for Diseases of the Skin.
MCALPINE, DOUGLAS, M.B., Ch.B. Glasg., M.R.C.P. Lond., Physician to the Department for Nervous Diseases at the Middlesex Hospital.
SCOTT, EVELYN M., M.B., B.S. Durh., Junior Resident Medical Officer, Royal Infirmary, Sunderland, to act as House Physician at the Children's Hospital.
Queen Charlotte's Maternity Hospital: BANISTER, J. BRIGHT, M.D. Camb., F.R.C.S. Edin., Consulting Obstetric Surgeon; RIVETT, L. C., M.C. Camb., F.R.C.S. Eng., Obstetric Surgeon to In-patients; LANE-ROBERTS, C. S., M.S. Lond., F.R.C.S. Eng., Obstetric Surgeon to Out-patients; JONES, A. MORRIS, M.B., Ch.B., Senior Resident Medical Officer; CARGILL, R. E. D., M.R.C.S., L.R.C.P. Lond., and ROBERTSON, J. A. W., M.R.C.S., L.R.C.P. Lond., Assistant Resident Medical Officers.
University of Edinburgh: LYON, D. MURRAY, M.D., D.Sc. Edin., F.R.C.P. Edin., D.P.H., F.R.S. Edin., Christison Professor of Therapeutics, in succession to Prof. J. C. Meakins; GREIG, Lt.-Col. E. D. W., I.M.S., M.D., D.Sc., Lecturer in Tropical Diseases.

Vacancies.

For further information refer to the advertisement columns.

Bedford County Hospital.—Asst. H.S. £130.
Birmingham City Municipal Bacteriological Laboratory.—Asst. Bacteriologist and Asst. Venereal Diseases Officer. £600.
Birmingham Cripples' Union Orthopædic Hospital.—H.S. £250.
Birmingham, Rubery Hill and Hollymoor Mental Hospital, Northfield.—Asst. M.O. £350.
Brentwood Mental Hospital.—Jun. Asst. M.O. £510.
Brighton County Borough Sanatorium.—Res. M.O. £350.
Brighton Education Committee.—Junior School Dentist. £400.
Cambridge, Addenbrooke's Hosp.—Cas. O. and Res. Anæsth. £130.
Cardiff City.—Res. Med. Supt. and Asst. M.O.H. £700.
Derby County Mental Hospital, Mickleover.—Sen. Asst. M.O. £450. Also Locum Tenens M.O. £8 8s. per week.
Evelina Hospital for Children.—H.S. and H.P. £120 each.
Freemasons Hospital and Nursing Home.—Res. M.O. £250.
Gloucestershire Royal Infirmary, Gloucester.—P.
Hull Royal Infirmary.—Asst. H.P. £130.
Leeds Public Dispensary.—Sen. Res. M.O. £200.
Lincoln County Hospital.—Jun. H.S. £150.
Liverpool City.—M.O.H. £1800.
London Temperance Hospital.—Cas. O. £150.
Manchester Royal Infirmary, Barnes Convalescent Hospital, Cheadle.—Res. M.O. £250.
Margate, Royal Sea Bathing Hospital.—H.S. £200.
Middlesex County Council Sanatorium, Harefield.—Locum M.O. £7 per week.
North Middlesex Hospital, Edmonton.—Asst. M.O. £200.
Oldham County Borough.—Asst. M.O.H. £450.
Queen's Hospital for Children, Hackney, E.—Asst. S. to Ear, Nose, and Throat Dept.
Rochdale Infirmary.—M.O. 300 guineas.
Salford Royal Hospital.—Hon. Asst. S.
Seamen's Hospital Society.—S.
Sheffield Royal Infirmary.—Med. Reg. £400. Ophthalmic H.S. £60. Also Asst. S.
Sudan Medical Service.—Medical Inspector. L.E.720.
University College Hospital, Gower-street, W.C.—Non.-Res. House Anæsth. £100.
Ventnor, Royal National Hospital for Consumption, &c.—Sen. Res. M.O. £300.
Willesden General Hospital.—Hon. S.

Births, Marriages, and Deaths.

BIRTHS.

CHAPMAN.—On July 10th, at The Green, Richmond, Surrey, the wife of Capt. R. W. Chapman, R.A.M.C., of a son.

MARRIAGES.

HENDERSON—HUNTER.—On July 12th, at St. Stephen's Parish Church, Perth, Alan Ashton Henderson, M.R.C.S., L.R.C.P., of Golders Green, London, to Dorothy Margaret, youngest daughter of Robert Hunter, of St. John's, Perth, Scotland.
WILSON—SNELL.—On July 3rd, at the Parish Church, Kilmington, Devon, Edric Frank Wilson, F.R.C.S. Eng., of Plymouth, son of Mr. and Mrs. F. Wilson, of Acton, Middlesex, to Vera, younger daughter of Mr. and Mrs. R. Snell, of Kilmington.

DEATHS.

COLLINS.—On July 11th, at "The Mall," Wanstead, Essex, George William Collins, L.R.C.P. Lond., M.R.C.S. Eng.
MAWSON.—On July 10th, as the result of an accident, James Hargreave Mawson, L.R.C.P., L.R.C.S., of Moorland-road, Leeds, in his 66th year.
RUSSELL-WELLS.—On July 14th, in his 55th year, Sir Sydney Russell-Wells, M.P., M.D. Lond., F.R.C.P. Lond.
SAUNDERS.—On July 7th, Henry William Saunders, M.D., F.R.C.S., of Eastbourne.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

AN IMPROVED METHOD FOR ARTIFICIAL RESPIRATION.

BY DR. EDWIN SEABORN.

FOR some time I have been accustomed to practise a method of artificial respiration which has proved itself in my hands quite useful. I have reviewed medical literature with the object of ascertaining how far the method is original. I shall therefore give a brief account of the methods hitherto recommended before describing that which I have devised.

Methods of Artificial Respiration.

The methods hitherto in use may be classified as follows: (1) Those which either expand or compress the chest to such an extent that air enters the lungs; (2) those in which air, under pressure, is forced into the lungs.

Included in the first class are those of:—

(*a*) Leroy. As the patient lies on his back, pressure is applied to the abdominal wall. On relaxing the pressure the natural recoil of the body allows air to enter the lungs, the inspiration being chiefly of the abdominal type.

(*b*) Howard. The patient lies on his back with a cushion under his shoulders, and strong pressure is applied to the lower chest and abdomen. The recoil of the chest on relaxing the pressure produces inspiration again of an abdominal type.

(*c*) Sylvester. As the patient lies on his back his arms are first pulled strongly over his head. Traction on the chest, through the pectoral muscles, produces inspiration. In the next movement the arms are pressed against the side of the chest, so assisting expiration.

(*d*) Brosch. This method resembles Sylvester's. The arms, after being brought over the head, are pressed while still in this position downwards until the thorax is raised by this leverage from the table. The force applied passes to the chest through the pectoral muscles and through the ligaments of the shoulder-joints to the scapulæ, so expanding and raising the chest and producing inspiration. Expiration is assisted by pressing the arms against the sides of the chest.

(*e*) Shücking. This method also resembles Sylvester's. The arms are pulled laterally from the sides of the body to a point above the head. The latissimus dorsi as well as the pectoral muscles are utilised to expand the chest, and so to produce inspiration. Expiration is assisted by pressing the arms against the sides of the chest.

(*f*) Marshall Hall. The patient lying on his side is allowed to sink face downwards until the front of the chest and abdomen are nearly in contact with the table, thus expelling air. In the next movement he is pulled up by the upper shoulder and hip. The force thus applied passes through the pectoral muscles of the upper shoulder to the chest and so produces inspiration.

(*g*) Francis. While the patient lies on his back, the body is alternatively raised and lowered by a pole thrust across under the chest. When the body is raised, the head and shoulders draw upon the chest through the pectoral and neck muscles, so producing inspiration.

(*h*) Schüller. The patient lies on his back, and the operator's fingers are hooked under the costal margins. Traction in an upward direction is then applied, expanding the chest, so producing inspiration.

(*i*) Pacini. While the patient lies on his back with the feet tied to the table, his shoulders are alternately pulled upward and pushed downwards, so producing inspiration and expiration. The force applied passes to the chest through the pectoral and latissimus dorsi muscles.

(*j*) Schroeder (for infants). The child, face upwards, is placed across the operator's hands. To produce expiration the child's body is flexed, approximating its head and feet. To induce inspiration its head and feet are allowed to hang over the edge of the operator's hands. The head and shoulders draw on the chest through the pectoral and neck muscles.

(*k*) Buist (for infants) is much like Schroeder's. The child, face downwards and with the head away from the operator, is held on one of the operator's hands. It is rolled over into the other hand. The child is now face upwards with the head hanging down, and inspiration takes place. The head and shoulders draw on the chest, through the pectoral and neck muscles, so producing inspiration.

(*l*) Schäfer. While the patient lies on his face, strong pressure is applied to the lower part of the thorax. The cubic content of the chest is reduced much below that of even forced expiration. The natural recoil of the chest on relaxing the pressure produces inspiration.

In all the above methods except those of Leroy, Howard, and Schäfer, the expansion of the chest in inspiration depends very largely on traction applied through the pectoral muscles. Unfortunately, in the conditions which render recourse to artificial respiration necessary, the pectoral, like all the other voluntary muscles, have lost their tone, and a large part of the force applied is uselessly expended on the shoulder-joints instead of on the chest.

Of the many methods of the second class—i.e., in which air is forced into the lungs—the following are the chief :—

(*m*) The founders of the Royal Humane Society who adopted in 1774 the method utilised by the Dutch Society. The mouth of the operator is applied to the mouth of the patient, and the latter's lungs are inflated by blowing. The idea of mouth-to-mouth inflation is probably as old as the idea of resuscitation itself.

(*n*) John Hunter (1776) used a bellows, with double cylinders, which takes the place of the operator's mouth. Air is alternately injected and withdrawn. The ordinary fireside bellows had already been used for centuries for resuscitation.

(*o*) Kite used an apparatus which inflated and deflated the lungs, and his method was adopted by the Royal Society in 1786.

(*p*) Munro employed a catheter which was passed into the larynx, and was attached to a bellows.

Sir Benjamin Brodie, who had been requested to investigate the methods employed in resuscitation, reported against the use of bellows, and their employment was accordingly discontinued during many years thereafter.

(*q*) Hovatch placed the nozzle of a bellows in one nostril, and, while the mouth and other nostril were held closed, air was alternately forced into and withdrawn from the lungs.

(*r*) Stewart and Rogoff placed the nozzle of a bellows in the mouth, and while the nostrils were held closed, alternately forced air into and withdrew it from the lungs. The pressure of air was regulated by a valve.

(*s*) Sir Lauder Brunton, at the International Congress held at Rome in 1894, exhibited an apparatus which utilised an oxygen tank. A nozzle was placed in each nostril.

One disadvantage of all the methods by which air is forced into the mouth, nose, or pharynx is that air enters the stomach and pushes the diaphragm upwards, so diminishing the capacity of the chest. Many means have been suggested for obviating this, and among these are the following :—

(*t*) Roth, in using a bellows and a tightly fitting face-mask, at the same time applied pressure to the œsophagus.

(*u*) Kuhn used an instrument consisting of an inner and outer tube, which was pushed through the larynx, completely filling the glottis. Through the inner tube, a continuous stream of air was forced into the lungs, while through the space between the inner and outer tubes the air as constantly escaped. Just sufficient air pressure as would keep the lungs distended was employed.

(*v*) O'Dwyer and Fell employed an apparatus which very much resembles Kuhn's. It consisted of a double laryngeal tube. By alternately opening and closing the outgoing tube the chest was made to move as in ordinary respiration.

In 1908 Volhard demonstrated that an animal whose muscles had been paralysed by curare could be kept alive by injecting a stream of air into the trachea. He showed also that oxygen is more effective than air.

In 1909 Meltzer and Auer described a method of inducing anæsthesia by passing a stream of etherised air through a catheter passed into the trachea as far as the bifurcation of the trachea. At a pressure of 20 to 25 mm. of mercury anæsthesia could be continued indefinitely although no respiratory movements of the chest took place. The catheter employed must be of such calibre as to give space for the return of air from the lungs, otherwise cyanosis occurs. The cyanosis, however, disappears if the stream of ingoing air is stopped for a few seconds. Meltzer and Auer suggested that the apparatus would be of service for the resuscitation of the drowned.

In 1912 the American Medical Association, in coöperation with the National Electric Light Association and the Association of Electrical Engineers, inquired into the means and devices employed for resuscitation. In 1914 the American Government requested the American Medical Association to recommend the apparatus which, in their opinion, would be the most serviceable for use by laymen in emergencies.

American Medical Association's Report and Suggested Method.

The Association named a committee consisting of Dr. G. W. Crile ; Dr. Meltzer, of the Rockefeller Institute ; W. B. Cannon, of Howard University ; James Erlanger, of Washington University ; and Yandell Henderson, of Yale. After exhaustive investigations, carried out on animals and man, they reported that existing devices were either mechanically uncertain or that they injured the lungs by withdrawing air under negative pressure. They recommended the use of a new method based on that of Meltzer and Auer already described.

In this modification a suitable metal tube, several sizes of which must be kept on hand, is passed into the pharynx, and a glass-blower's bellows is employed to pump air into the lungs. The air pressure is regulated at 20 to 30 mm. Hg by means of a valve. A heavy weight, secured by a broad bandage, is placed on the belly, or a man is made to sit on the abdomen. The flow of air is interrupted by a valve worked by the hand, so causing inspiration and expiration alternately.

Regarding the physiology of respiration, I would point out that the hæmoglobin of the aerated blood of the lungs always carries a full load of oxygen. When more oxygen is needed an increase is effected by a combination of two factors : (1) by increasing the rapidity of the flow of blood through the lungs ; and (2) by increasing the rate and depth of respiration. The increase of the depth of respiration effects an increase in the surface of lung epithelium exposed to the air. In asphyxia we can control the second factor only, and that by artificial respiration. To compensate for the feebleness of the circulation the aerating surface, and therefore the air content of the lungs, should be increased to its maximum.

Technique of the New Method.

The method which I have devised, and shall now describe, seems to be particularly adapted to achieve this result.

As we have seen, most of the methods depend upon indirect traction on the pectoral muscles. The new method depends upon traction applied directly to these same muscles, the toneless condition of which now aids in the procedure.

A man stands on each side of the patient, each with palms held upwards ; each grasps very firmly with both hands the anterior axillary folds. The hand which is nearer to the patient's head passes deeply into the axilla and takes a broad hold of the pectoralis major and minor muscles. The other hand grasps the anterior axillary fold as low on the chest as possible, so taking hold of the lower part of the origin of the pectoralis major muscle. Traction is then applied in both an upward and outward direction until the thorax is lifted from the table, and until the lower part of the latter is expanded to its greatest extent. A long blast of air is heard to whistle through the larynx. This whistling continues for several seconds. It is most important that traction be continued until the whistling ceases, as otherwise the area of lung inflated with air does not arrive at its maximum. In this method both the upper and lower thorax are fully expanded. It would appear that the diaphragm descends and, owing to the lateral traction, is pulled out flat. To aid expiration pressure is applied through the operator's hands to the chest-wall, but the grasp on the axillary folds need not, during this movement, be relaxed. These movements are performed alternately. Where two men are not available this method of practising artificial respiration can be carried out by one operator standing at the patient's head. The best results, however, cannot be obtained in this way, as the lateral pull outwards cannot be applied with the same force. The method is not one exclusively for the operating-table, but may equally well be applied in the case of the apparently drowned, after clearing as far as possible the air-passages of water or other substances.

Advantages of the New Method.

The author in several cases of asphyxia has had the opportunity of comparing this method with those of the first class already described. From the intensity and duration of the whistling in the larynx it becomes immediately apparent that the amount of air which enters the lungs at each respiration is very much greater than in any of these other methods.

With a view to measuring the volume of air which enters and leaves the lungs with each respiration, experiments were conducted on the cadaver in the pathological department of St. George's Hospital, and with the assistance of Dr. Robert Donaldson, head of that department.

In all the methods of the first class very little air entered or left the lungs. In no case was there a flow of more than a few cubic centimetres, so few, indeed, that the amount could not be conveniently measured in the spirometer employed. In the method which I advocate there was constantly, with each movement, a flow of 200 cubic centimetres of air.

I believe that the method is superior to all others because of the greater air-intake, because it can be applied at once, because of its extreme ease of application, because no apparatus is necessary, and because it can be applied with little risk of sepsis during an abdominal operation. It should be applied immediately after the patient's respirations fail.

I would suggest that a funnel attached to an oxygen tank be placed close to the patient's mouth. I would further suggest that pressure be put on the abdominal aorta and inferior vena cava, and on the brachial arteries and veins so that the blood may be determined to the brain and respiratory centres. These centres are very rapidly and profoundly damaged by lack of oxygen, so profoundly, indeed, that they may be unable to recover even though the heart-beats may for a time increase in rate and power.

(*Continued at foot of next page.*)

PUBLIC HEALTH IN CAPE TOWN.

WE have received from Dr. T. Shadick Higgins the annual health report of Cape Town for the year ended June 30th, 1923. Dr. Higgins only took over the duties on June 18th, 1923, so that the period dealt with shows the health position at the beginning of his term of office. It may therefore be of interest to give a table showing some of the principal health statistics for the European and non-European populations respectively, for comparison with English districts.

Race.	Estimated mid-year population.	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Diseases respiratory system.	Neonatal mortality.	Infant mortality.	Maternal mort. from childbirth.
European . .	107,430	22·3	11·1	0·7	0·9	1·4	30	82	4·6
Non-European .	83,590	51·5	29·2	4·2	0·5	8·1	50	200	4·6

It will be noted that the statistics of the European population of Cape Town do not differ appreciably from those of a clean-aired English town, while the non-European population has a very high birth-rate and an excessive death-rate from all causes, tuberculosis and respiratory diseases, the death-rate from cancer being low and the maternity mortality from childbirth being equal to that of the Europeans. Dr. Higgins, in presenting the report, pays a tribute to the good work of his predecessor, Dr. A. Jasper Anderson, the first whole-time medical officer of health for the city, who gave up his appointment on March 31st, 1923, after over 21 years' service.

A study of the report makes it obvious that public health problems in Cape Town are not essentially different from those in the old country. Thus, among the admissions to the City Hospital for Infectious Diseases, the only unusual ailments are one fatal case of anthrax, and one case of Malta fever which recovered. Enteric fever heads the list numerically, as might have happened in an English hospital during the 'eighties of last century. In the table giving the causes of death, the most striking features are the prominence of enteric fever among both races, and of diarrhœa, disease of the stomach, enteritis, syphilis, bronchitis, and pneumonia amongst the non-European population. During the year seven cases of leprosy were notified, one European female and three each of non-European males and females. There were no deaths from leprosy recorded. An outbreak of influenza occurred during June, 1922, and continued into the year under review, and was accountable for seven European and five non-European deaths. As in many parts of England, a small-pox hospital serves the purpose of many surrounding districts. The report of the maternity and child welfare work, submitted by Dr. Mary van Ingen, shows that this department is administered on similar lines to those at home. There are ten sanitary inspectresses and a chief. The notification of every child born after the completion of the sixth month of pregnancy, whether alive or dead, is required within 24 hours. Of 7088 births notified during the year, 6337 were notified by midwives and nurses, 740 by parents and others, and 11 by doctors. Five bureaus for infant consultations are in operation, and their work continues to increase. Voluntary workers give their help. Minor ailments are treated at the bureaus, dried mild is supplied to infants who cannot be breast-fed, and free dinners are provided at two centres for poor nursing mothers. A sanatorium is needed for tuberculosis, as the accommodation in the infectious diseases hospital is inadequate. Last year 100 cases were admitted to the last-named hospital. Dr. W. P. Cooney, in his report as to the work of the male V.D. centre, emphasises the need for education of the public, and points out that suitably trained coloured and native lecturers would do an immense amount of good in this direction.

As examples of the prevalence of venereal disease in Cape Town, he mentions one household where three servants out of five were suffering from syphilis, one being in an infectious state, and a public institution in which four members of the staff were sufferers, two of whom, one infectious, were concerned with food preparation. The want of proper homes, lack of education, and the almost complete absence of moral sense in a number of patients attending the clinic are some of the difficulties. One of the greatest dangers is supplied by the large floating population of the casual type who sleep in the open and cannot be induced to attend for regular treatment. In spite of these difficulties only one case of "accidentally acquired" syphilis was noted during the past year. One definite case of reinfection of syphilis was also noted. In her account of the female V.D. clinic, Dr. Mary van Ingen shows that 64 pregnant women were treated, and that of these 32 gave birth to healthy infants, 20 ceased to attend with results unknown, one infant was born with spina bifida and died at 17 days old, while the remaining five whose treatment was insufficient had stillbirths or infants who developed syphilis. Three of the last-mentioned five only came up for treatment during the last month of pregnancy.

New regulations for protecting the milk-supply were introduced in October, 1922, and follow lines which are familiar in this country. Attention is given to the protection of meat while on sale by the provision of fly- and dust-proof screens, and improvements have been made in the type of carts and wagons used in the conveyance of meat. During the summer months two men are constantly employed in dealing with the mosquito and fly nuisance. Two deaths of Europeans from malaria were recorded during the year—one at the age-period 1 to 5, and the other at the age-period 35 to 45.

A large amount of work has been done in repairing and improving insanitary property, but owing to the scarcity of houses the council has been holding its hand with regard to closing of houses.

(*Continued from previous page.*)

IMPROVED METHOD FOR ARTIFICIAL RESPIRATION: REFERENCES.

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JUNKET POWDER.

Messrs. Edward Birks and Son, 88, Castle-street, Reading, have submitted to us a sample of junket powder which consists of active rennet in a desiccated form. Our tests have shown that junket made by its use possesses all the qualities of that made with liquid rennet, while the dry powder keeps its qualities unimpaired and has the additional advantage of being easily portable. Birks's junket powder is sold in bottles from 4½*d.* to 3*s.* 6*d.*, and a small wooden measure is supplied with each bottle.

ARE WHITE CATS WITH BLUE EYES DEAF?

To the Editor of THE LANCET.

SIR,—There is an interesting article in the *Quarterly Journal of Medicine*, April, 1924, by Dr. Stobie, on the association of blue sclerotics with brittle bones and progressive deafness. I was not aware of the associated deafness till I read this recently. Long ago I read the statement—I rather think in one of Darwin's works—that white cats with blue eyes are always deaf. I have once or twice been able to verify this, though not recently, but I would suggest that the coincidence is sufficiently striking to make it worth while to follow up this interesting problem in comparative pathology to see whether the resemblance is more than superficial. I feel fairly sure that in one case the same features appeared in some of the kittens, but I did not look closely at the sclera or do more than satisfy myself as to the deafness.

I am, Sir, yours faithfully,

EDMUND HOBHOUSE.

Brechin-place, S.W., July 10th, 1924.

CLERGYMEN AND HOUSEMAID'S KNEE.

IN the recent Conjoint Examination a candidate, who had already given evidence of common sense as well as surgical acumen, was asked by one of the examining surgeons why clergymen did not suffer from housemaid's knee. The answer desired was that housemaids habitually strain to scrub or dust more ground when kneeling on one spot than they can conveniently reach, and therefore poise themselves on the patella with their heels in the air; whereas clergymen kneel decorously on the tuberosity of the tibia, almost sitting on their heels. This is an ingenious suggestion which might well form a subject of instruction for domestic workers.

Portable Radiographs.—The telephonic address of this firm at 1, Woodstock-road, Bedford Park, London, W. 4, on whose work we commented in last week's issue of THE LANCET, is *Chiswick 2162.*